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ABSTRACT

A study explored the effectiveness of secondary school textbooks as tools for developing attitudes or skills that are essential for lifelong learning. During the study, a student textbook review questionnaire was administered to about 60 students from five high schools in the Portland, Oregon area. The students were asked to evaluate eight social studies and four biology textbooks from the perspective of how frequently the textbooks explicitly required users to develop attitudes or skills in the following areas: behavior (information seeking, problem solving, independence, looking for relationships among disciplines, and utilizing community resources for learning); life skills (preparing for careers, higher learning, adult life roles, and constructive use of leisure time); attitude (cooperating with others, developing curiosity, viewing learning as a source of personal satisfaction, and setting goals and standards of accomplishment); and basic skills. Based on the students' responses, recommendations were made calling for more emphasis on relating facts and figures to students' own experiences and relating textbook content to students' present and future activities as family members, workers, and citizens. More emphasis on basic skills in math, communication, and problem solving and greater concern for student attitudes and values were other needs identified by the study. (MN)

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School Textbooks and Lifelong Learning: Textbooks as Tools for Learning How to Learn;

An Exploratory Case Study: United States of America, for The UNESCO Institute for Education, Hamburg.

"The education for adolescents...must be more than a parcel of real estate, more than a building, more than a focus of community attention and contention. It is social process and civic function with one central pedagogic purpose: the safe passage of our youth into adulthood and the citizen's estate."
--The National Panel on High School and Adolescent Education

Coordinated by the
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INTRODUCTION

Around the world there are clear signals that governments and educators increasingly view education as needed throughout the whole lifespan. Indeed, lifespanning education as a way of managing and coping with rapid change has become one of our best hopes for fulfilling human potential and realizing national and international harmony.

In the United States of America, as in most countries, education traditionally has occurred during childhood and early adolescence for most people. One enters compulsory schooling at the age of five or six, attends school for several years and leaves the formal educational system as a teenager to enter the world of work or higher education. The very phrases in which we speak to young people about schooling reflect a view of education and learning as limited to taking place within a prescribed timeframe. How often has the reader said to a child "when you finish school..."? Thus, one communicates an expectation to the young that education must be completed either before or as one emerges from adolescence rather than creating a point of view that education should be a recurrent process throughout a lifetime.

If the citizenry is to become the "learning society" called for by the Kellogg Foundation-sponsored Task Force and others since the early 1970s, we must earnestly work to change the lock-step sequencing of education, work and retirement. The challenge is being met with several responses, some of which will be discussed in a companion section titled "Trends in Lifelong Learning." The present focus, however, is concerned with formal compulsory schooling as one portion of lifelong education. Initiated by the UNESCO Institute of Education-Hamburg (UIE), this study has focused upon the school textbook as a part of the schooling experience. Specifically, the purpose of this study is to identify some of the characteristics of textbooks which seem to facilitate the development of attitudes, skills and behaviors essential to a lifetime of learning.

Supported with funds from the National Institute of Education, the national study's objectives reflected several levels of concern. At the international level the study sought:

- To contribute to the accomplishment of UIE's long-range goal of defining and communicating to the world educational community theoretical, specific and practical information about lifelong learning
- To share information with educators around the world about development, status and trends of the lifelong learning movement in the United States of America

- To make available to UIE and interested others around the world brief insights into textbook development and production procedures and standards in the United States of America
- To study within a nationally relevant yet internationally useful framework, promising characteristics of specific tools or components of a system of lifespanning education which are common to many nations--in this case textbooks--as communicators of lifelong learning process and content

- To organize and report observations and findings in such a manner that project outcomes may serve as guidelines for

  a. Textbook writers
  b. Textbook publishers
  c. Textbook selectors/adoptors
  d. Textbook users
  e. Curriculum designers

  who are concerned with nurturing lifelong learning as a function of compulsory schooling

- To strengthen lifelong learning as both a process and a strategy for addressing solutions to educational problems of developed as well as developing nations

The study at the national level sought:

- To help focus the attention of educators, the public and federal agencies on lifespanning education as a public need and a public priority

- To strengthen the perception of the secondary school curriculum as a part of a system of lifespanning education, with specific regard to the potential and the role of textbooks as resources for developing lifelong learning skills and attitudes

- To note and report briefly on major trends and research needs in lifelong education in the United States of America

- To point out the characteristics in selected textbooks which facilitate the user's growth and development as a lifelong learner

- To suggest, through reporting our findings, initial guidelines for use by:

  a. Textbook writers
  b. Textbook publishers
  c. Textbook selectors/adoptors
  d. Textbook users
  e. Curriculum designers

who are concerned with nurturing lifelong learners as a function of compulsory schooling

- To increase mutual understanding between the educational community of the USA and its international counterparts through assisting with dissemination of project results

GENERAL PATTERNS OF UNITED STATES EDUCATIONAL SYSTEM

	AGE		GRADE	
Early	3			
Childhood	4			
Education	5			
	6		1	
	7		2	
Elementary	8		3	
Education	9		4	
	10		5	
	11		6	Middle
	12		7	School
	13	Junior High	8	
	14		9	
Secondary	15		10	Senior
Education	16		11	High
	17		12	
Postsecondary Education	18 and above	2 year colleges	13 14 15 16	4 year colleges; universities

PROFILE OF THE EDUCATIONAL SYSTEM IN THE UNITED STATES

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PROFILE OF THE EDUCATIONAL SYSTEM IN THE UNITED STATES

The United States, unlike many countries, does not have a national educational system. Each of the 50 states is responsible for organizing and regulating its own educational system. But generally, these systems follow a common format.

Formal education in the United States is usually a sequential progression of stages, where students complete one stage before beginning another. Basically, these stages are:

- Early childhood education
- Elementary education
- Secondary education
- Higher education

In all states, school attendance is compulsory. Thirty-six states require attendance to age 16, five states to age 17, five states to age 18, three states to age 15, and one state to age 14. However, many states make exemptions to the age requirement. For example, in 17 states, students have fulfilled their attendance requirement when they graduate from high school, even though they may not have reached the legal school-leaving age. Completion of the eighth grade fulfills this same attendance requirement in 16 states.

Early Childhood Education

Sometimes called pre-elementary or preschool education, this stage serves children five years of age and younger. The goal of this stage is to develop the habits, attitudes and skills children need to be successful in their elementary school years. About half of all the children in the United States participate in some kind of preschool experience. These schools usually follow two types:

- Nursery school (for three and four year olds)
- Kindergarten (for five year olds)

Individuals, private organizations such as church groups, and some school systems operate nursery schools and kindergartens. The federal government funds Project Head Start, a special type of preschool for children from low-income families. For many children, the preschool experience is a part of daycare provided while parents are working. Some daycare is federally subsidized for low-income working parents.

Elementary School

Elementary school is designed for children ages 6 to 12 or 13. Usually, the elementary school begins with the first grade, although some schools also offer part-day kindergarten classes for five year olds. Sometimes, elementary schools are called grade schools, primary or grammar schools. Most communities in the United States have at least one elementary school. A typical elementary school has six or eight grades. Children are about the same age in each grade. Students are expected to meet group standards before being promoted to the next grade, although this may differ among schools.

Most children go directly to a secondary school after elementary school. However, some systems have a middle school for students of upper-elementary age (10 or 11 to about age 14). Generally, middle schools consist of grades 6 through 8, although some include grade 5. A middle school is sometimes called junior high school. More frequently, however, the junior high school is considered to be part of the secondary system.

Secondary Education

Junior and senior high schools are responsible for the secondary education of young people in the United States. These schools are designed to help students become functional members of society, and to prepare them for employment or advanced studies after graduation. High school graduates receive diplomas as a symbol of successful completion of secondary school. Almost all young people in the United States enroll in high schools. About 75 percent of these graduate. A junior high school usually includes grades 7 through 9. A senior high school usually includes grades 10 through 12. Some communities have a six-year combined junior and senior high school, while others have a four-year high school, including grades 9 through 12. Most high schools are comprehensive in structure, offering their students a general course of study as well as basic vocational courses and certain specialized options such as classes designed to secure advanced placement at college. Some large school systems operate separate vocational high schools where a variety of entry-level pre-apprenticeship and pre-technical offerings are available--usually tied to related academic coursework.

Higher Education

This stage continues a person's schooling beyond the high school years. Over 60 percent of all high school graduates in the United States receive some type of advanced schooling. In the United States there are about 2700 post-secondary institutions. About half of these are small privately owned liberal arts colleges. A majority of the publicly owned institutions of higher learning are large state universities. About four-fifths of all students in higher education attend public institutions.

Institutions of higher education include:

- Community and junior colleges--these usually offer two-year programs in both general and career education
- Technical institutes--these usually offer two-year programs in such fields as automotive engineering, business and electronics
- Colleges and universities--these provide a wide selection of four-year liberal arts and career programs
- Professional schools (separate or as a part of a university)--these provide training in such fields as business, dentistry, education, engineering, law and medicine

TEXTBOOK PUBLISHING AND PRODUCTION PROCEDURES

TEXTBOOK PUBLISHING AND PRODUCTION PROCEDURES

To be successful, textbook publishing companies must always be aware and responsive to the educational trends and needs of the public. For it is the educators themselves that guide and direct which texts the book company will publish and in what form. Typically, a textbook publishing company enters into a partnership with an author. The goal is to produce a book that will reach a wide audience of users, while at the same time build respect and reputation for the company. Book publishing companies live by their reputations and their reputations come from the books they publish. Therefore, the publisher's effort is directed towards producing the best possible book. The success of a book company depends on how well the partnership between the author and the publisher works. It also depends on how well the publisher discerns the needs and trends of the market.

The Editor

Generally, the editor is the person from the publishing company who works with the author. However, the term "editor" applies to a number of people who have very different responsibilities. Essentially, there are two types of editors: (1) those who direct and manage a publishing program, often called sponsoring editors and (2) those who review manuscripts for accuracy and style and who help to translate the manuscript into printed pages, often called editing supervisors.

The sponsoring editor can also be called a senior editor, an executive editor or a project director. In most large publishing houses, there are usually one or more sponsoring editors for each subject area and for each level in that subject area. For example, in one large book company there is at least one sponsoring editor for elementary school social studies, another for high school social studies and a third for college level social studies. The same holds true for mathematics, foreign language, English, science, music, art and so on. It is the responsibility of this person to plan and publish as many books as are needed to serve that particular market. To do this, the sponsoring editor maintains an awareness of the market, including other developments in the area and current trends. He or she talks with educators, curriculum specialists and other people who have expertise in that field. This person attends professional conferences and conventions, keeps abreast of the subject and does research as necessary. This is critical, as book companies only publish what educators want. Most sponsoring editors have expertise in the subject matter, especially in the elementary and secondary school book departments. In other words, these people are usually experienced teachers and writers. They have skills in helping authors. For example, the sponsoring editor for high school social studies has probably taught social studies for several years. He or she may have contributed to professional journals and may have been involved in the writing of a social studies text. It is the duty of a sponsoring editor to read all submitted manuscripts. This is one way the publishing house stays current on educational trends.

The person who follows a manuscript from typescript to finished product is the editing supervisor or the production editor. Generally, these people are English majors with several years of experience in producing books. The duties of the editing supervisor include:

- Reviewing the manuscript many times
- Making sure sentences are clear and direct
- Eliminating redundancies, contradictions and inconsistencies
- Correcting grammar and usage
- Establishing uniformity in punctuation, spelling and style
- Planning illustrations with the approval of the sponsoring editor and the author
- Reorganizing and rewriting copy with the approval of the sponsoring editor and the author
- Finding ways to effectively display tables, charts and graphs
- Supervising the layout of the product

Most large publishing companies provide an array of resources to aid the editing supervisors in their work. These resources include inhouse libraries and professional and technical assistance. Often, major publishing companies provide training programs for editing personnel.

The Designer

Every book has its own unique flavor and style. The book designer is responsible for translating that style to the printed page. This person possesses skills in art, typography and printing. The designer will determine layout, choose colors, select the typefaces and help prepare the art work for illustrations and the cover. The major function of the designer is to make the product appealing to the reader while also making it easy to use.

The Production Specialist

This person is skilled in printing processes including equipment, paper, binding methods, cost control and scheduling. He or she works with the editor to determine the most efficient way to produce books of high quality and low cost.

The Author

Before an author begins a manuscript, he or she usually consults with the editor. An author must know the following before actual writing begins:

- The size of the book and how to estimate number of manuscript pages
- The typeset of the manuscript and the style to be followed
- A schedule of timelines
- How illustrations are to be prepared
- How the manuscript is to be organized
- Contractual agreements, including royalties, permissions, copyrights and so on

After the writing is completed, the manuscript is sent to the sponsoring editor.

The length of time required to produce a book varies from a few months to well over a year. The time depends on the size and complexity of the book, the amount of additional work required on the manuscript, the number and type of illustrations, the workload of the printers and other factors. Publishers generally do not own their own printing equipment.They usually contract with printing and binding firms and therefore have little control over the printers' schedules.

Once the manuscript has been reviewed by the sponsoring editor, it usually goes through these procedures:

- First Analysis

  Here the manuscript is looked at for organization, style, design elements, illustration specifications and so on. The sponsoring editor must be sure the manuscript is ready for production. Often, experts in the field are engaged to review the manuscript. The sponsoring editor takes all the reviewers' comments and suggestions into account when going over the manuscript. The author is often asked to respond to these comments and make corrections or revisions.

Meetings are then held with the production manager, designer, editing supervisor, illustrator and others. This group makes decisions about costs, printing, binding, size, art, color and so on. At this point, the manuscript is turned over to the editing supervisor.

- Editing and Designing the Manuscript

  The supervisor is responsible for making sure there are no problems with organization and style. The author is consulted if any major alterations are needed. Meanwhile, the designer and illustrator are working on format, art, color and so on.

- Making a Sample

  When the designer reaches a decision about how the book should look, he or she will set portions of the book in type. This is to see how the finished product will look. Sample pages are sent to the author for approval. Once the design is set, the manuscript is marked for type. When the art, editing and design are finished, the manuscript is sent to the typesetter.

- Galley Proofs

  The manuscript is first set in galleys--sheets of paper that hold enough lines of type to make about 2-1/2 pages of an average book. Galleys are then sent to the author for inspection in installments. The author reviews the galleys carefully, making any necessary corrections.

- Page Proofs

  Once the galley proofs are returned to the compositor, they are divided into page lengths. Page proofs include the illustrations, the page numbers, the headings and so on. Page proofs are read by proofreaders and once again by the author.

Finally, the book goes into production. By this time advertising and sales promotion people have begun their work. The author is consulted about the special marketing qualities of the book, the audience for which it is intended, how the book differs from others in the field and suggestions on ways to best advertise and promote the book.

Several months before publication, sales people discuss the book with potential customers. They send names of possible reviewers to the marketing director. They find out which people will be influential in establishing the market.

When the book is finally published, copies are sent to those people recommended by the sales force, as well as any others who may express interest in the book. Salespeople talk with educators for whom the book is appropriate. They make presentations to textbook committees and state adoption committees.

TEXTBOOK ADOPTION

TEXTBOOK ADOPTION

In the United States of America, textbook adoption is not regulated by the federal government. Adoption policy and procedures vary among the states. As of this writing, 26 states are what publishers call "open territory" states. These states have no state process for adopting texts; rather, each local or county school district makes its own decisions about which texts are approved and when adoption occurs. The remaining 24 states are known as "state adoption states". In these states, the governing board for the public educational system has established policy and procedures for selecting the textbooks according to state legislative provisions.

Most "state adoption" states are on a four-to six-year adoption cycle. This means that new textbooks for a particular content area are adopted every four to six years. The rationale for state adoption versus individual district adoption is that the adoption process, which will be described shortly, forces a periodic review and updating of curricula. Another advantage of adoption through a state process is price savings for schools due to contractual sales agreements negotiated with publishers by the state. Textbooks are available to a district school at a quantity price through a textbook depository which stores and releases the books at the state-negotiated prices.

Oregon provides a case study example of how state adoption works. The Oregon State Board of Education establishes general criteria that must be met by texts before they can be adopted. In addition, criteria specific to the content area are recommended to the State Textbook Commission by a committee of subject matter teachers. An advisory committee comprised of subject matter teachers from around the state and chaired by a curriculum area specialist employed by the State Department of Education is appointed.

All publishers having basal textbook materials (the primary text of a given course or area of study) in the appropriate content areas and at the grade levels to be considered are invited to submit bid proposals to the commission. The publishers themselves are asked to screen their own materials to assure that those submitted meet the general requirement as basal materials. Publishers are also required to submit briefs documenting how the submitted texts meet the criteria.

As the criteria are being developed, public input is sought through an open public meeting and hearing process. Public testimony is also made to the commission concerning the texts submitted to the commission by publishers.

Members of the advisory committee spend several months, generally during the summer, evaluating the textbooks against the general and specific criteria. Publishers during this period may also make presentations to the committee members. After the evaluations and presentations are completed, recommendations are made to the State Textbook Commission. The commission conducts its mandated Selection Meeting and the list of selected texts is released to publishers and all interested parties.

The last steps of the adoption process are State Board ratification of the selected list, distribution of the state-adopted list to the local school district, and finally the decision by the local district to use one or more of the texts from the list. In most cases, the district forms a committee of teachers who then select the texts to be used.

Textbook Use

The extent to which textbooks are used once adopted by a state or local school district varies greatly. One school administrator may require that teachers use the texts selected by the district while in another school, teachers may have considerable latitude in the selection of other classroom materials. An informal inquiry of two fairly large districts in the western states indicated that many teachers use adopted texts as reference material and choose to rely on current articles and books, films, video and audio tapes, guest speakers, other resources and class, groups or individual projects as classroom teaching tools. In some situations, a teacher may use a non-approved text if a justification is made.

Yet, the textbook remains dominant in most American classrooms. It is that fact which supports the need for this study and for further studies of how school textbooks can address the development of lifelong learning skills as an outcome of schooling.

A REVIEW OF RESEARCH ON TEXTBOOKS

A REVIEW OF RESEARCH ON TEXTBOOKS

An Education Resources and Information Center (ERIC) search was initiated using the following descriptors:

- Research on textbooks
- State of the art reviews
- Research completed in 1978-1980

This search identified 78 entries made over the last three years that focused on some aspect of textbook investigation. The attached bibliography yields a vast array of information and data regarding textbooks published in this country as well as in others. However, there was a paucity of information found regarding lifelong learning concepts in the textbook domain. It appears that this area of study has not been addressed to any extent. In general, research on textbooks falls into these categories:

- Readability of texts

  This area has received great attention and coverage by researchers. Much is known and documented about the critical aspect of matching learner reading level with printed reading level and the spread of readability within course textbooks.

- Sex bias in texts

  This area, including the treatment of women in United States history books, has recently received much attention from researchers. The conclusion here is that most texts need more careful editing and additional information in order to correctly portray womens' lives and roles.

- Designing texts

  These data revealed a number of factors that help learners use texts. The factors studied and for which data are available include:

  1. Incorporating learning activities
  2. Use of traditional type on the printed page
  3. Sentences and the power of suggestion
  4. Understanding human behavior
  5. Prose structure
  6. Use of illlustrations
  7. Development of ideas in texts
  8. Questioning styles
  9. Use of advance organizers--tools such as vocabulary lists, chapter highlights and summaries used to help learners' comprehension of the material

10. Understanding social psychology
    Also found were guidelines for writers of instructional texts, and a study which investigates what a textbook is, what it should and should not do.

- Evaluation

  The studies in this category focused on the use of evaluation procedures to determine effectiveness of material. Included in these studies were:

  1. Formulating credible questions
  2. Constructing evaluation designs
  3. Planning information collection, using tests, scales, observations, and questionnaires
  4. Collecting evaluation information
  5. Planning and conducting information analysis activities
  6. Reporting evaluation information

The remainder of the ERIC entries cite research data in the following diverse areas:

- French grammar and vocabulary
- Factors that promote math comprehension
- Chinese studies
- Basic writing skills, writing evaluation, writing assessment
- Comparing texts for English as a foreign language
- Goals of science texts
- Comparison of texts from different countries
- Text validity studies
- Unintended career education in literature texts
- Use of media
- Skills indices for language arts
- Elementary spelling
- Language in African education

Again, the inadequacy of data was noted regarding the extent to which school textbooks can promote lifelong learning. While the data approach these questions, they do not directly address lifelong learning as a total concept. Clearly, this is an area which deserves greater attention and support.

METHODOLOGY

METHODOLOGY

Recent years have been marked by a growing concern about public secondary schooling among educators, the government, parents, students and the general public. Many panels and conferences have studied and discussed both the achievements and the shortcomings of the nation's high schools. Many voices have issued calls for reforms. This introspection has indeed produced significant efforts at constructive change. For example, the National Panel on High School and Adolescent Education, on completing its study, issued in its report The Education of Adolescents (1976) 11 recommendations that, if adopted, would help strengthen the high school as an important component of an educational system concerned with making formal education a lifespanning option. Among the recommendations are:

1. That the unattained practice and inadequate concept of the comprehensive high school be replaced with the more practical goal of providing comprehensive education through a variety of means, including the schools.

2. That educational programs be inaugurated for the joint participation of adolescents and other interested and qualified adults in the community--pedagogical programs which may be designated Participatory Education (learning by doing what is socially useful, personally satisfying and health-supporting for the individual and the community).

3. That small, flexible, short-term, part-time schools be established and made available to all who are qualified and interested.

4. That compulsory daily attendance be reduced from all-day sessions to an academic day of two to four hours.

5. That the basic role of the high school as society's only universal institution for the education of the intellect be re-examined.

6. That a community guidance center be established, which would house qualified personnel, such as counselors, psychologists, social workers and technicians in the construction, administration and analysis of tests and other evaluative procedures, who now work in the high school and in other agencies.

7. That recognition be given to the fact that adult and adolescent citizen participation in planning and reviewing change in education is vital to the installation and maintenance of needed reform.

8. That federal support and state review be provided for the costs of planning and evaluation of programs designed to bring adolescents and adults together for learning and work.

The panel goes on to assert, "Research is needed in how to plan new social institutions for learning. New places for education are needed." Thus, as in many countries, United States' schools continue to seek improved approaches to meet the challenge of preparing youth for the transition to adulthood. The National Panel's report reminds us that the school remains accountable as the major formal communicator of American culture and heritage, but that learning and teaching can, must and does occur in non-school settings. The panel's findings suggest that traditional formal education must join with nontraditional, informalcommunity-based educational resources to provide a variety of learning situations, opportunities and experiences that truly reflect the demands made by today's world upon individuals of all ages.

Taken in this context, the implications for the school and its curricula are profound. Communicating knowledge and methods of the various academic disciplines must always be central to the role of the high school. But, one must remember that upon leaving the high school the adolescent's life roles and responsibilities will expand. No longer will the compulsory student role be mandated by law and if the late adolescent, soon-to-become adult, does not recognize the need for recurrent educational experiences (attitude) or does not have the skills to participate successfully, the chances are great that he or she will never become a lifelong learner. The demands of successful parenthood or a career, for example, require skill at critical thinking and problem solving, decision making, self-direction and an understanding of how the adult world works and how to negotiate the system in a constructive manner.

Moreover, the knowledge explosion of the twentieth century and the lengthening human life span mean that knowledge gained by age 20 will be somewhat obsolete by age 30 or 35 and substantially obsolete by age 45 or 50 and completely outdated by 70. Similarly, few specific vocational skills learned during the teenage years will continue to serve the individual over a lifetime of work. The implication is that secondary education must seek to produce young adults who are capable of engaging in continuing self-development as a lifespanning process. A well-known leader in the American lifelong learning movement, Malcolm Knowles, has identified competencies essential to self-directed learning that suggest a rationale for the component skills, attitudes and behaviors with which this project is concerned and which will be displayed later in this section. Among these are:

- A concept of self as being a non-dependent and self-directing person

- The ability to relate to peers collaboratively, to see them as resources for diagnosing needs, planning learning and learning; to give help to them and receive help from them

- The ability to diagnose one's own learning needs realistically, with help from teachers and peers

- The ability to translate learning needs into learning objectives in a form that makes it possible for their accomplishment to be assumed

- The ability to relate to teachers as facilitators, helpers or consultants, and to take the initiative in making use of their resources

- The ability to identify human and material resources appropriate to different kinds of learning objectives

- The ability to select effective strategies for making use of learning resources and to perform these strategies skillfully and with initiative

- The ability to collect and validate evidence of the accomplishment of various kinds of learning objectives.

Again, the implications for the school and its curricula are profound.Compulsory schooling from this vantage point should become one part or stage in a system of learning resources that addresses and meets the individual's learning and educational needs over a lifetime--the family, the community, the workplace, private and governmental agencies, the church and so on. Such a complex system requires that the individual be equipped and motivated to assume responsibility for planning and managing his or her own learning and education. Two important additional suggestions are 1) that the primary business of compulsory schooling lies in the preparation of students with the skills, attitudes and understandings needed to sustain a lifetime of learning and 2) that schools should be responsive to the needs of persons beyond compulsory school age.

Thus, the assumption that the role of the school and its tools is to communicate and develop lifelong learning skills, attitudes and behaviors created the basic framework within which the present study was carried out. Recognizing, then, that textbooks are an important teaching/ learning tool, the central question, as adopted by both the UNESCO Institute for Education and the national team was "What are the characteristics of school textbooks that are expected to develop the learning abilities considered essential for a lifelong process of education?"

The three-stage analysis task was aided by the UIE description of the objectives of schooling relative to lifelong education. These include:

a. To prepare for a life in which the individual is in a position to undertake and manage his or her own process of lifelong education

b. To develop a desire to learn and an active attitude towards training

c. To encourage self-sufficiency

d. To develop the abilities of self-education, self-instruction and self-evaluation, ("learning to learn")

e. To increase "educability" and develop the mechanisms of learning;

f. To introduce pupils to wide fields of learning

g. To link educational experiences among themselves, (inter-disciplinary)

h. To link educational experiences with life

i. To combine study with practical work

j. To develop creativity

k. To teach pupils to use all the educational resources available to them outside school

l. To teach pupils to make use of various sources of information;

m. To teach individuals to work together in a group

This outline guided the discussions at Hamburg meetings of the international team leaders and resulted in the drafting of a matrix. The matrix was conceived as a strategy for guiding the preliminary systematic analysis of textbook functions within the context of the schools' lifelong education responsibilities. The matrix sought to present the essential positive characteristics generally looked for in any good textbook juxtaposed with those deemed desirable in a text having a concern for lifelong education. Key words for the matrix were drawn from the following:

- Format--size, color, typeface, binding layout, graphics
- Presentation--sequence of material, structure
- Language--appropriate reading level for the target group, clarity
- Methodology--development of critical thinking and problem-solving skills
- Achievement--self-assessment of progress and mastery

The characteristics related to lifelong learning presented in the matrix included:

- Stimulation--encourages interest, curiosity
- Transfer--encourages application of education to practical life experience
- Creativity/Self-direction--enhances self-directedness, independent learning and creativity
- Linkage--serves a bridge to other diciplines
- Flexibility--facilitates use in many situations by students, teachers, parents

Thus, the matrix resulting from Stage A looked like this:

	Format	Presentation	Language	Methodology	Achievement
Stimulation					
Transfer					
Creativity/ Self-Direction					
Linkage					
Flexibility					

The use of a graduated scale was made optional at the discretion of each national team leader. It was consideration of this scale that generated the next steps of the national team's analysis (Stage B of the Preliminary Design).

While the matrix provided the basis for a common analysis among project participants, it required refining before the in-depth analysis could be carried out. The team members addressed the problem of devising a method of systematic assessment that would support the judgments made in any gradation scale to be developed.

With much thought and discussion, the team re-examined the project's central question "What are the characteristics of a school textbook that are expected to develop the learning abilities considered essential for a lifelong process of education?" That, with a review of the draft matrix, led us to focus on the "learning abilities" and therefore to formulate other basic and useful questions:

- What do we want students to be prepared to do when they leave compulsory education?
- What are the critical elements and skills essential to successful lifelong learning?

- Are there organizing concepts or categories among the elements that hold clues to a systematic approach to our analysis task?

These questions, further consideration of the matrix and gleanings from the work of Bloom, Knowles, Tough, Skager, Dave and others led to the design of an instrument the team thought would provide at least a rudimentary analysis tool. This instrument asked the reviewer to tally the frequency with which a textbook explicitly asked its user to develop or use an attitude or skill identified as essential to successful lifelong eduction. A trial analysis was conducted using the tally. Next, the instrument was reviewed by staff of the Instructional Improvement and Research on Evaluation Divisions of NWREL. After modifications that allowed a basis on which to determine the strength of the textbooks' effort, the instrument was adopted.

The tally instrument is included in the Appendix; however, the items are reviewed here for the reader's convenience.

1. Behavior

- Information-seeking; in school, outside school
- Development and/or use of problem-solving skills
- Initiate a learning activity
- Independent learning
- Look for relationships among disciplines
- Utilization of resources in the community for learning

2. Life Skills

- Preparation for careers in its field
- Preparation for higher education
- Preparation for vocational training
- Preparation for adult life roles
  --family member
  --citizen
  --friend/neighbor
  --worker
  --consumer
  --volunteer in community service
- Preparation for constructive use of leisure time

3. Attitude

- Cooperate with others
- Approach life with openness and curiosity
- View learning as a source of personal satisfaction
- Recognize the need for and value of education throughout life
- Set goals or standards of accomplishment and engage in self-evaluation

- Examine values
- Consider alternative points of view

4. Basic Skills

- Reading
- Writing
- Computing
- Speaking
- Listening
- Analysis/critical thinking
- Synthesis
- Evaluation

The desirability of strengthening these items through the addition of other items and examples is recognized and should be addressed in future efforts. Further refining and use of the tally instrument could, we hope, lead to the development of a rating tool for use by textbook review committees in the adoption process when there is concern for students' lifelong education skills and attitudes. While the national team did not carry out a scientific statistical analysis, the potential for future users to do so certainly exists.

During this stage, the work was guided by the agreements made at the international meeting in Hamburg. As agreed:

- "Textbooks in use with pupils during their last three years of compulsory schooling would be examined."

In the USA study, textbooks for use by high school students in grades 10, 11 and 12 were examined.

- "Textbooks would be selected from the general area of social studies by all research teams and from additional areas by individual choice."

The USA study also examined texts in the areas of natural science.

- "Textbooks used with adult students would not be referred to since their manner of use was likely to be substantially different from that of secondary school."

- "It was the general understanding that the materials to be analyzed were the pupil's textbooks. The inclusion of the teacher's manual was considered but no decision was made on its role in the analysis."

Other agreements with regard to general procedures included:

- "The research would concentrate on a content analysis. The assessment of the use of the textbooks in schools was considered to be beyond the present project. The reports would include illustrations if possible and appropriate. If possible, some copies of textbooks analyzed would be sent to the coordinator."
- "The practical nature of the study was clarified. Arguments used would be derived from practical examples and the results would offer guidance for the development of textbooks in line with lifelong education."
- "The several constraints affecting textbook production are to be borne in mind throughout the project. The description of the local situation may itemize constraints such as authorization, prescribed syllabus, requirements of binding, format, etc."

To aid in the selection of specific textbooks, NWREL approached representatives of major publishers, asking them to nominate widely-used textbooks they considered to be contributions to the lifelong education of 10th, 11th and 12th grade students in the selected topic areas. Several state and county agencies were also queried about approved textbooks in these topics and a faculty member of the School of Education of a large local university was interviewed. Another source of information was suggestions of texts actually in use by selected secondary schools. We requested nominations from selected individuals teaching in public schools. Texts cited in other studies were considered and included. Textbooks named frequently were considered to be the most important to the analysis. Thirteen major U.S. publishers were contacted by means of a letter and asked to lend their nominated texts to the project. The request letter also included an abstract describing the project with the list of features reviewers would be looking for during the analysis. Copies of the request letter and the abstract may be found in the Appendix.

The content areas finally selected were social studies, including civics, United States history and world history; and biology.

As a preparatory step preceding the in-depth review, the team leader and other NWREL staff attended the Oregon/Washington curriculum Media/Materials Fair in February. This event generally attracts educators from throughout the Northwest. The companies' exhibits provided an opportunity to view all the latest educational materials available, as well as a chance to talk with practitioners in the field.As Stage C of the analysis was being carried out, team members expressed concern that while textbooks' lifelong learning potential might be obvious to educational researchers, that potential might be totally lost on the ultimate beneficiaries of the study--the students. Thus, after much thought, it was decided to try to determine how students perceived textbooks. To do this, a Students' Textbook Review Questionnaire was created. A NWREL team member surveyed five area schools to locate classrooms where the review textbooks were being used. A limited survey of four classrooms proved quite interesting. About 60 students volunteered responses. Findings will be referred to in the Textbook Studies section of this paper.

Questions for the student questionnaire were formulated along the lines of the matrix and the tally instruments. However, they were stated rather non-specifically so as not to lead the respondent into saying what he or she might think we wanted to hear. Questions included:

1. Describe briefly your first impression of the textbook?
2. What did you like best about the book?
3. What did you like least about the book?
4. Is this a book you would want to keep after you finished the class?
5. If you kept the book, how would you use it?
6. If you kept the book, would anyone else use it? Why?
7. Does this book make you interested in any other subjects? What other subjects?
8. Did the book give you any ideas about activities to do in school?
   What activities?
9. Did the book give you any ideas about activities to do outside school? What activities?
10. Did the book make you want to get more information on the subject?
11. Do you think you will use the information this book gave you after you leave high school? How will you use it?
12. Is there anything else about this book you would like to tell us?

The final stage of the project was the analysis and, of course, the present report.

TEXTBOOK STUDY: SOCIAL STUDIES

INTRODUCTION

During the last two decades, the Social Studies curriculum in the U.S. has been the focus of change. Adelson, et al (1971) wrote:

> "The new social studies programs emphasize learning about issues and ideas and how to deal with them, rather than acquiring factual information..."

The textbooks selected for analysis of their efficacy in fostering lifelong education are products of this curriculum reform. In general, these texts were assumed to provide particularly good examples of how textbooks might accomplish this. This has held true to a large extent. Yet our literature search indicated that researchers and practitioners are still working to make the reforms operationally effective.

The "new" social studies programs have sought to help students find relevance through providing a framework of theories and concepts that aids students in organizing the factual information presented. Content, then, is organized around central themes and concepts such as power or leadership and around problems and issues such as freedom of speech, legal rights or justice.

In general, social studies programs and materials try to get students involved in inquiry and discovery. Methodology and processes emphasized in most of these programs include questioning, analyzing, formulating hypotheses, drawing conclusions and valuing. Thus, much of the material seems well-suited for use in an open and flexible classroom atmosphere and teaching style (as compared with a more traditional and authoritarian classroom situation).

Although an analysis of how the textbooks are used in the classroom was not within the scope of work for this study, the concerns of team members mirror those of leaders in the teaching of social studies: Teachers must help students see relationships and relevance to life and work experience and develop skills for lifelong learning. The President of the National Council for the Social Studies, Anna Ochoa, wrote in Science and Society: Knowing, Teaching and Learning,

> "A tenth grade student who has science at 10:00 a.m. from Teacher "A" and social studies at 2:00 p.m. from Teacher "B" is hardly likely to comprehend or wrestle with relationships between the two."

Textbooks and other materials, regardless of how bright, attractive and innovative, cannot change schools. Again, it is the people--teachers, students, school boards and administrators, who support and work inside schools --that must address teaching and learning from the perspective of education as a lifelong process and help students see applications of content and skills beyond the textbook.

THE ANALYSIS

The social studies analysis included eight textbooks that are:

1. On state-adoption lists
2. Readily available to schools
3. Receiving wide use in schools or scheduled for use in the near future
4. Used with high school students in the 10th, 11th and 12th grades

Social studies textbooks examined by that national team included:

1. Bragdon, H.W. and McCutchen, S.P. History of a Free People. New York, New York: Macmillan Publishing Company, Inc., 1978.

2. Gillespie, J. and Lazarus, S. American Government: Comparing Political Experiences. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1979.

3. Mc Clenaghan, W. Magruder's American Government. Boston, Massachussetts: Allyn and Bacon, Inc., 1979.

4. Mehlinger, H. and Patrick J. American Political Behavior. Lexington, Mass: Ginn & Co., 1980.

5. Risjord, N and Haywoode, T. People and Our Country. New York, New York: Holt, Rinehart and Winston, Publishers, 1978.

6. Shenton, J., Benson, J. and Jakoulek, R. These United States. Boston, Mass: Houghton Mifflin, 1978.

7. Todd, L. and Curti, M. Rise of the American Nation. Mew York, New York: Harcourt Brace Jovanovich, 1977.

8. Welty, P. The Human Expression. Philadelphia, Penn.: J. B. Lippincott Company, 1977.

The team felt that the project's objectives would best be served by reporting the analyses in a synthesized format, addressing the key concepts and areas defined in the matrix and the tally analysis instrument and providing generalized examples. Thus, this report does not seek to become a critique of any single textbook, nor is it an exhaustive review of those examined. Rather, it was the intent of the study to take the first steps toward determining what features the textbooks might reasonably incorporate in order to enhance their potential for helping students become lifelong learners.

To what extent did the various state-adopted social studies texts used in secondary schools reflect basic lifelong learning principles? That is, how are a student's lifelong learning skills, attitudes and behaviors fostered through interaction with a course textbook? The Hamburg matrix and the supporting items from the NWREL-developed instruments provide the organizing framework for our discussion.

An analysis of texts revealed a broad spectrum of techniques through which lifelong learning principles are reflected. While all presented excellent content information, involving the student in checking knowledge, comprehension and application of that content, not all consistently addressed such areas as the student's past experiences, values, goals and some of the other aspects of personalized learning. But let us begin by discussing findings as they related to the Hamburg matrix.

Format

Durability of bindings is a consideration in the adoption and selection of textbooks. Thus, the social studies texts reviewed were generally sturdy, with hard-cover bindings and durable paper stock. Title and authorship were prominently displayed along with a graphic design relevant to the overall content or theme of the textbook. Most covers used strong colors with graphics of contrasting colors. Generally speaking, photographs were not used on covers.

The size of the textbooks reviewed gave the team members their first impression. Most were bulky and heavy. This aspect of the format is problematic. On the one hand, sufficient information for a year-long or semester-long course of study must be contained between the two covers. On the other hand, one feels empathy for the student carrying home weighty texts from two or three courses of study in order to complete assignments. The responses to the student questionnaire supported the latter conclusion. First impressions from students reflected this unmanageable quality perhaps leading to our findings that the majority of students surveyed felt that too much material was addressed. Additional student comments are discussed later.

Inside, the textbooks were colorful. All texts contained quality graphics, photographs, charts, maps and other visual aids. Even those texts that relied heavily on a standard or strictly narrative style included graphs and pictures. This aspect of most of the texts provided a positive demonstration of the use of another discipline (art) to enhance the students' understanding of the material. For example, a painting portraying a colorful street scene in a major U.S. city was reproduced. In the caption, the student was asked to identify the period of history shown and to reflect on what life was like for the people depicted in the painting. This technique received widespread use; however, some captioned questions required more thought from students than did others. Visual aids were plentiful in some texts, less so in others. However, in the majority of texts, they were well related to major concepts or themes and attractively and appropriately situated. For the most part, the team agreed that the use of graphics, photographs, charts and the like helped to strengthen the overall appeal of the textbook.

Most publishers used typefaces larger than those found in college-level texts. Different typefaces were used to help emphasize major points. Bold type received wide use to denote titles, headings and sub-headings within the narrative materials. In some cases, these were also marked by the use of different colored inks.

It was clear to the reviewers that the use of visuals and color can spark students' interest. However, mere attractiveness of material cannot sustain that interest on a long-term basis.

Presentation

A major strength of all texts analyzed was in the presentation of the material. Four texts covered the history of the United States from colonization to the present, with an emphasis on major historical personalities. Three texts focused on the history and structure of this country's political and governmental system. Another dealt with world history. Each text covered the material adequately in terms of the factual information presented. Material was sequenced appropriately. In some instances this meant sequencing according to a chronology of events, while in others it meant presenting concepts in a logical, orderly progression and supporting those concepts with a clustering of events that might serve as case studies. Thus, students are led from the simple to the complex. For example, civics texts may start with an apparently simple question or assumption to the students about the universal occurrence of political behavior among all people, and move the students systematically, through hypothetical or actual case studies, to explore the complexities of conflict, values, justice, influence, compromise, decision making and participation.

The use of chapter summaries, chapter outlines, unit goals, unit themes and other advance organizers help support and strengthen student understandings. In some texts, the team observed that students were asked to consider the case studies in light of their own attitudes. This was reinforced by simulation activities that called for students to organize their own issue-oriented campaigns to meet local concerns both of the present and future. These topics might range from health and environmental issues such as wilderness preservation, nuclear power development and nuclear waste disposal to civil liberties issues such as the right of free speech, the right of assembly or freedom of the press. As students dealt with such projects, the texts generally communicated factual information about the structure of the political system. In teachers' guides, teachers were generally urged to point out the roles and responsibilities of various governmental bodies and elected officials. The local focus of the issues projects seemed designed to help students relate to the factual information and integrate fact and theory.

Various other strategies were employed by the textbooks that invited students to become active learners. For example, research projects were suggested that would force the student to seek out and examine other sources of information. Newspapers, magazines and non-print media were suggested as resources to students in conducting their research projects. In some activities, students were urged to conduct small group research projects.

Other features noted by the team included:

- Questions were almost uniformly used at the end of the chapters.
- Parenthetical comments were often included in order to expand on a concept, definition or fact.
- Relatively low emphasis was placed on rote memorization of dates, wars, names and the like.

Teacher guides reinforced the variety of possible approaches to learning.

Language

The "new" social studies textbooks reflect a move on the part of authors and publishers toward clarity and straightforwardness in the presentation of information. Obviously, language remains the primary tool of communication, even in textbooks that make heavy use of visual communication.

As adults, students will need to call upon their own language skills if they are to become effective lifelong learners. Thus, the team was concerned with how the textbooks employed language both as models of written communication and as communicators of the content. Generally, texts seemed to avoid such barriers to communication as ambiguity, cliches, stilted writing and overstatement.

Another point of interest to the team was the appropriateness of the language used to the grade and ability levels of the intended student audiences. The rationale supporting this concern springs from our observation that reading was the most obviously reinforced skill across all the textbooks reviewed. A readability check of the textbooks revealed a grade level range of 8.0 to 13.0. Interestingly, even within a single textbook, the readability can span three or more grade levels.

This may have some justification in the fact that students in any one class will be operating at different levels of reading ability. Therefore, it might be argued, the text must meet the students at the various skill levels they bring to the class. The team members felt, however, that inherent in this approach is the potential for student frustration. Those at the lower reading ability levels would be only minimally successful or might be so if left on their own to get information from the textbook, although research doesn't support this. Only students in the middle and upper ranges would be those whose instructional levels are matched.

The style of most of the analyzed textbooks was direct and informal, using, for the most part, an everyday, almost conversational tone. When specialized or technical terms were used, various approaches to helping students understand the terms were employed. For example, in an American history text new terms were presented in italic typeface with an asterisk directing the students' attention to the definition of the term at the bottom of the page or column. Another text provided definitions in the margins, while another spotlighted definitions by placing them between bold, black lines within the column of text in which they were introduced. Few glossary sections were noted, however--a point also noted as lacking by several of the students surveyed.

All textbooks ably conveyed the vocabulary of the discipline and some provided phonetic pronunciation guides as a part of the text to aid learning. Appropriate use of these terms seemed to be best encouraged by using them repeatedly.

End-of-chapter exercises also encouraged students to deepen their understandings of terms through questions. Several texts highlighted in-depth explanations by using separate sections printed in contrasting ink--an effective means of drawing students' attention to important terms and concepts. Most texts encouraged students to practice using language through such devices as essays, commentary in response to portrayals of issues, debates and the like.

A few texts seemed to be very deliberate in the use of colorful and evocative expressions, conjuring up for the student visions of such American historical highlights as the Revolutionary War, the Lewis and Clark expedition, the Oregon Trail, the gold rush and the Great Depression. Expressions like "redcoat," "cow town," "one-horse town," "breadlines," and "war on poverty," find common use in textbooks.

Methodology

A number of strategies aimed at maintaining pupil involvement, communicating content and facilitating understanding were included in varying frequencies and with varying degrees of success. The examples displaying the most strength in their methodologies usually employed:

- Question Exercises--open-ended, essay, multiple choice
- Writing Exercises--reflection, stating and supporting opinions, persuasion, analysis and commentary

- Research--additional readings from other source and supplemental materials, interviewing for information (particularly regarding current issues)

- Analysis and Critical Thinking--comparing and contrasting, identifying related issues and concepts, drawing inferences and conclusions, interpreting data

- Simulation and Games--role-playing, situational problem-solving, group projects and presentations, use of activities to encourage consideration of attitudes and values, use of the community's resources and people.

Teachers' manuals are often stronger sources of emphasis on lifelong educational skills. In one good example, the skills that a particular lesson aims to develop among students include:

- Reading for comprehension
- Following directions
- Analysis
- Classifying
- Sequencing
- Drawing inferences
- Gathering data
- Synthesis
- Evaluation

Clearly, if a teacher succeeds in helping students become skilled at doing these critical learning tasks, students will emerge from compulsory schooling more competent at learning independently.

In a students' workbook, authors very clearly pointed out to the student what skills the lesson or excercise required her/him to use, a method leaving little doubt as to what is expected and what is accomplished by doing the exercises.

Several teachers' manuals and students' activity books demonstrated some degree of accommodation to different learning style preferences, an emerging area of concern among American educators. For example, a case study of the executive branch of government could be carried out exclusively by reading resource materials. The same case study could also be carried out by an experiential learning project based at a community site. Thus, although the issue of learning style preference was not explicitly highlighted, students' preferences were accommodated to some extent by providing them with alternative strategies for learning the same content. This has important implications for lifelong education: helping students understand there are alternative approaches to learning the same content as adolescents should help them consider alternative learning strategies as adults.

Achievement

Being able to assess one's own learning progress and competence is, as Tough, Knowles and other leaders in the lifelong learning movement suggest, essential to self-directedness in learning. The team encountered a reliance upon end-of-chapter essay questions calling for explanations of the key points and central themes presented in the sections or chapters. Another assessment technique was that of testing the students' understanding of terms by asking them to give definitions. Students were also asked to identify events and their central characters, thereby providing them a way to check their recall and retention of factual information.

In most texts, students were frequently asked to check their understanding, perceptions and opinions of events as a part of the classroom activity so that students and teacher have opportunities to discuss and examine differing points of view. Thus, assessment is appropriately both objective and subjective in nature.

Several texts used an approach to assessment that, within an end-of-chapter survey, integrated opportunities to the student to test skills other than factual recall, opinion and the like. Here students were asked to check their mastery of geography and map skills, writing skills, oral presentation skills, research skills and artistic creativity. Teachers' manuals provided sample test questions.

Many of the assessment techniques presented, however, would leave the overall assessment of comprehension and progress to the judgment of the teacher. Teacher guidance in the form of sensitive and thoughtful feedback to students is an important strategy for helping students learn to do effective self-assessment.

ANALYSIS FROM THE LIFELONG EDUCATION PERSPECTIVE

This section reports on the analysis of the textbooks' approaches and contributions in the lifelong learning perspective. The lifelong education themes of the matrix and the tally instrument provide the organizing framework of the section.

The descriptors from the matrix are:

- Stimulation--encourages interest, curiosity
- Transfer--encourages application of education to practical life experiences
- Creativity/Self-Directions--enhances self-directedness, independent learning and creativity
- Linkage--serves as a bridge to other disciplines
- Flexibility--facilitates use in many situations by students, teachers, parents

The descriptors from the tally instrument are:

1. Behavior
   - Information seeking; in school, outside school
   - Development and/or use of problem-solving skills
   - Initiate a learning activity
   - Independent learning
   - Look for relationships among diciplines
   - Utilization of resources in the community for learning
2. Life Skills
   - Preparation for careers in its field
   - Preparation for higher education
   - Preparation for vocational training
   - Preparation for adult life roles
     --family member
     --citizen
     --friend/neighbor
     --worker
     --consumer
     --volunteer in community service
   - Preparation for constructive use of leisure time
3. Attitude
   - Cooperate with others
   - Approach life with openness and curiosity
   - View learning as a source of personal satisfaction
   - Recognize the need for and value of education throughout life
   - Set goals or standards of accomplishment and engage in self-evaluation

- Examine values
- Consider alternative points of view

4. Basic Skills

- Reading
- Writing
- Computing
- Speaking
- Listening
- Analysis/critical thinking
- Synthesis
- Evaluation

Stimulation to interest and curiosity--encourages interest, curiosity

Many attitudes and relationships are heavily influenced by first impressions. And so it is with the attitude of the student relative to a school textbook. The team members' first impressions of the textbooks related to the physical features of the textbooks. To the adult educator's eye, most of the textbooks were bright, attractive and appealing. The colorful covers, the photographs, graphs, maps, charts and reproductions of paintings generated high levels of visual stimulation and interest. Yet, in the students' comments about their first impressions, the reviews were mixed. The question relating to first impressions drew responses such as "lots of information," but many students reported their feelings that the books were too big and bulky and, in the words of one young person, "a chore to tote around". This suggests that large-sized and weighty textbooks may work against stimulating interest and curiosity among some students, no matter how appealing and colorfully presented the material appears to be.

The content has the potential for sparking the interest and curiosity of the reader. All of the textbooks encouraged students to further investigate various aspects of events. A critique of the content in terms of the subject matter was not within the scope of this study; however, the team felt that some sections might more effectively engage and sustain the student's interest by allowing a more thorough-going study of the theme or topic before asking the student to move on to the next one. This impression was held by some of the students surveyed as well. In the minds of the team, there remains a question about what stimulation, motivation and scholarship may be minimized due to the attempt to include all of American history from 1450 through the late 1970s in one textbook used in one 180-day school year.

Focusing on social issues was an apparently successful strategy for maintaining pupils' interest and curiosity through the device of content. Relevance and currency could be injected through tracing the historical perspective on the problems still being addressed by American society. For example, one text provided a graphic display of how issues such as dealing with power, transportation, agricultural production and business have been consistently important to the American economy since the early 1600s. Another text included end-of-chapter exercises that deliberately linked problems of the past with the present. This linking was reinforced in the teachers' manual as well as by providing suggestions for discussion and simulation activities. One example asked students to relate issues that are as current today as they were in the past, e.g., third-party political movements, or abuse of presidential powers.

Content must also respect the level of sophistication of students. Most texts sought to do this by not avoiding instances showing an America at fault in its handling of important matters at home and abroad. For example, several texts were quite open in asking students to explain contradictions in American policy, actions and political rhetoric and in describing points of view.

Taking a look at the human side of history and government serves to bring a quality of vitality to events and issues that would help students internalize, empathize and remember important themes and events, as well as provide a basis from which to help students develop social science skills.

Transfer--encourages the pupil to proceed beyond his or her immediate environment, aiming at an open attitude to life and application to life as the student experiences it.

Information about history and civics cannot prepare students for life outside and beyond the classroom. In times of rapid change it is clear that a good grasp of the facts alone does not equip students for life beyond the school room. Thus, both authors and teachers must take special care to lead the students in discussing the implications, applications and relationships of the course content and its lessons to life as the students experience it. The social sciences as a field of study offer particularly rich opportunities for encouraging the student to develop curiosity and open attitudes toward the world beyond his or her immediate environment.

Several textbooks reviewed by the team were designed for use with companion activity books or workbooks. By combining end-of-chapter quizzes, discussion topics, vocabulary exercises and suggestions for research activities and the like with a variety of learning and skill-building activities and projects in the activity and workbooks, the overall impact of the texts was strengthened. These activities generally require students to seek information from sources outside the textbook, but for the most part from sources inside the school, such as library references and teachers and text material from other courses and disciplines. Students may be asked to interview a person from the community to gather information or opinions about the topic being studied. Several exercises asked students to make judgments as to the variety and number of sources and points of view that would be required in order to arrive at an accurate and balanced view of an event or situation.

Many examples were found in both textbooks and activity books in which students were asked to use current and widely discussed issues such as the energy crisis or civil rights for undocumented aliens as the focus through which they could deepen their understanding of historical events and concepts as well as building skills of comprehension, classification, sequencing, analysis, synthesis, inference and evaluation and application. This strategy also invited students to explore their personal viewpoints on the issues and to seek out and consider the viewpoints of friends, family and acquaintances.

Teachers' guides, more often than the textbooks themselves, suggested that teachers encourage students to proceed into the community to use its resources and people. It was through instructions to the teacher and the activity books, too, that students' awareness and understanding of cultures and countries in other parts of the world were addressed. Again, universally significant issues and concepts were the vehicles. These might include private ownership of land, food production or energy resources.

Students were asked to consider the impact on their own lives of historical decisions and long-established policies as well as emerging ones.

The use of official tests, applications, and forms, and interviews with the community's naturalized citizens and officials in such projects as exploring the meanings, rights and responsibilities of American citizenship, provide opportunities for students to transfer and apply school-initiated, school-based learning beyond their usual environs. Taking the project a step further, one text suggested meetings at foreign consulates or embassies to determine the meaning of citizenship in other countries, thus expanding the student's horizons and perspectives of the world beyond his or her own national boundaries and deepening the understanding of the concept of citizenship.

The practice of research skills also seems designed to motivate students to go beyond the confines of the classroom and the home environment. Students were asked to analyze the political careers of female and minority persons currently holding elective offices. By creating profiles of these individuals, students could understand and assess the factors that influenced them and helped them achieve. At the same time, of course, students develop an appreciation of the ethnic diversity of the United States, and how this factor both enriches the nation and causes tensions.

Several teachers' manuals suggested alternative teaching strategies that were rich resources for the teacher concerned with helping students develop an open attitude toward life. Students were first encouraged to research and then to pretend to adopt the point of view of persons of ages and circumstances vastly different from their own. Next, students were asked to consider and discuss a current national problem from the assumed viewpoint. Such an exercise would have teenagers thinking about how the elderly and retired persons on fixed incomes would feel and cope with rising inflation rates. One would expect that, having carried out such an assignment, the student would empathize with the elderly person's situation and be more sensitive to that person's needs and feelings. A skilled teacher might take such an exercise a step further to introduce the concepts of mutual interdependence, responsibility and community.

An interesting example of a teaching for transfer strategy, as this project defines it, helped students understand and practically deal with the regulatory powers and agencies of state government. Students were to contact appropriate agencies to learn about their rules and procedures by actually doing such things as:

- Filing complaints of discrimination on the basis of sex or race
- Applying for welfare or medical assistance aid (medicaid)
- Finding out about laws on minimum wage or hiring of minors
- Applying for a small business assistance loan or a home improvement loan
- Filing for candidacy for political office
- Obtaining benefits for military veterans
- Visiting a penitentiary
- Impeaching an elected public official
- Getting help for drug rehabilitation
- Getting a driver's license, a liquor permit or title for a car

In this example, students spent in-school time preparing and after-school time contacting appropriate agencies, just as adults might call during work hours to make appointments and visit the agencies on their own time--a realistic simulation. This illustration also provides an example of using the school curriculum and its materials to help students use their learning as a means through which they can cope with their problems and the problems of others as well as exploring new resources for solving problems.

Linkage--serves as a bridge to other disciplines.

The "new" social studies curriculum has encouraged the kind of multidisciplinary approach that lends itself well to the development of skills for lifelong education. Adopting the inquiry method, most textbooks asked students to develop language arts (communications) skills and to recognize that culture is made up of many elements or disciplines, all of which contribute to the richness of daily living and human experience. This section examines a range of examples encountered by the team.

History books often drew from the arts to strengthen their presentations of events and circumstances of long ago. For example, paintings, lithographs or other visual art pieces were reproduced. Captions posed questions to the students concerning the meaning of the picture or asked students to arrive at inferences or conclusions based on their observation of the painting or graphics. In most texts, these art works were well-related to the content and served to reinforce concepts being presented.

A variety of art was present in most textbooks. Not only reproductions of paintings, but those of sculpture, cartoons, photographs, woodcuts and engravings were shown. In addition to exposing students to many media, these helped to capture the flavor of the times and social issues being discussed.

Crafts and pastimes were also pictured. Women were shown weaving, spinning, and sewing, and men at hunting, farming, soldiering or construction.

Some textbooks used a few examples from great literature or urged readings from period books to help students expand their understanding of times and cultures other than their own. For example, Mark Twain's Life on the Mississippi was suggested as a source for finding out about what river travel on steamboats was like in the mid-1800s. Another sought to involve students in readings from seven or eight reference books or novels to research topics like the civil rights movement, the labor movement or protection of the environment. Most of the outside readings could be located in school or community libraries, while some of the popular historical novels would be available in paperback form at local bookstores.

Noting the impact of science and technology on American life also provided linkages between disciplines. In a student activity guide, students were told that they would need a biology or chemistry textbook in order to complete the assignment. The multidisciplinary approach was pointed out to students by identifying the disciplines upon which the activity would draw at the beginning of each activity. Students were also asked to consider any possible scientific bases for the development of certain social customs like food taboos or superstitions.

Geography was a discipline to which history and civics texts referred students. Climate and landforms were cited as factors in the development of societies. Geography was also important to discussions of historical events such as the westward migration in the United States or the Civil War.

Particularly effective at communicating the multidisciplined approach were the student activities that integrated several disciplines in a single assignment. In a world history lesson, students were asked to trace religious movements and other indicators of the spread of cultures. Here religion, geography, anthropology, language arts and sociology were interrelated and presented to the student in a highly deliberate manner. For example, students were to trace on a map the movement of various religions across the Far East. Using several ink colors, students indicated where religions originated. In the same exercise, excerpts from the literature of the religions were provided and students were asked to respond to questions, to interpret their meaning and to consider what impact the religion might have upon the students in their school.

A lesson about world explorers provided the means for introducing language arts (writing), political science (concepts of power and empire) and health science (causes and cures of vitamin deficiency diseases).

Mathematics was introduced as students were asked to compute distances, percentages and area. Several activities asked students to convert inches and feet to centimeters and meters.

Occasional references to goods and services provided some exposure to consumer economics. Similarly, references to imported goods presented issues of international trade and economics.

The multidisciplinary approaches also allowed students to consider values of other times and other cultures and to compare and contrast those with their own. For example, a lesson on environmental protection offered students a chance to explore the impact of technological developments having potentially harmful side effects and their implications for public safety. In the same lesson, issues of rights and justice and personal values were introduced. Students grappled with value conflicts like the rights of business people and the free enterprise system vs. the public's right to employment, full information, and healthful living and working conditions.

The team concluded that while most textbooks included some references and materials from other disciplines, lifelong learning objectives could be enhanced by deliberately increasing the multidisciplinary emphasis.

Creativity and self-direction--enhance self-directedness, independent learning and creativity.

Educators have long recognized that good teachers are creative teachers. Teachers that use strategies in the classroom that spark and hold the interest of students have modeled the creativity and self-direction vital to lifelong education through the teaching of subject matter. Creative teaching encourages and invites the learner to personalize the subject. How, then, do textbooks support the development of creativity, independence and self-directedness among 10th, 11th and 12th grade students? This section discusses examples of creative strategies in textbooks, teachers' manuals and students' activity guides used to invite the students to approach the subject imaginatively and to develop their own creativity and independence as learners in the process.

Civics and history texts alike provided a range of activities that demonstrated creative approaches. For example, in dealing with the concept of global interdependence, students were encouraged to identify and seek out as many different manifestations of the interdependence between their own state and other nations. The teachers' manuals often provided a few examples teachers could use to stimulate students' thinking. Brainstorming, either with the whole class or in small groups, was another technique textbooks, manuals and guides frequently used to encourage creative thinking in students.

Another strategy for developing both independent learning and creative thinking was simulation and games. Several textbooks incorporated activities asking students to imagine situations, to design scenarios and to role-play and dialogue circumstances and mock events significantly different from those experienced in their daily lives. Through such activities students were actively engaged in choosing a role, a topic, or an issue and finding new sources of information and new ways to present the information to classmates. These might include making films and tape recordings of interviews, or gathering old photographs or taking new ones to supplement oral presentations to the class.

One teacher's guide asked students to become futurists by making predictions about how their community would deal with an unresolved issue. Students were urged to conduct an independent community field study to substantiate the predictions they made.

Exercises often provided in the end-of-chapter sections offered additional opportunities for creative written responses to questions. Other end-of-chapter exercises encouraged students to develop artistic abilities by drawing, charting, mapping or building a model. Producing a dramatization of an historical event provided a chance for students to be both creative and resourceful in demonstrating what they had learned about the event.

Many suggestions for independent learning projects were encountered in the textbooks examined by the team and these also provided opportunities for the kind of creativity and self-direction essential to effective lifelong learning. In addition, these projects allowed for a great range of personal expression. For example, students could use the textbooks' content in:

- Making bulletin boards
- Drawing cartoons
- Illustrating political events
- Watching a movie or a TV program
- Writing lyrics for a song or composing the music for it
- Designing posters and advertisements
- Researching historical landmarks
- Developing proposals
- Writing movie scripts
- Conducting radio talk shows
- Identifying resource persons in the community and inviting them to speak in the classroom

One activity book took a very deliberate approach to encouraging the development of self-directedness in learning. The strategy was to take the student step-by-step through the scientific method of observation and experimentation and problem solving. As a skill was introduced or practiced, it was identified and pointed out to the student. No doubt was left as to its purpose relative to lifelong education, either. In the introduction, students were told that not only will these skills be useful in completing schoolwork but they will be helpful throughout life. Frequently, at the end of an activity, students were asked what they had learned through the activities that could be applied to other courses or areas of their lives.

The skills of self-directed learning--comprehension, gathering data, sequencing, classifying, inference, analysis, synthesis, hypothesizing, hypothesis testing, application, evaluation and communication--were presented to some extent in all textbooks, teachers' manuals and students' activity guides, but few basal programs overtly, explicitly addressed and incorporated all of them clearly enough to insure that students would "get the message" without teacher intervention.

Flexibility--facilitates use in many situations by students, teachers, parents.

Are textbooks flexible enough to be used by teachers, students and parents in varying situations? The response to this question is a qualified "yes" from the team members and from students. Students responding to the question, "If you kept the book, how would you use it?" generally regarded the texts as reference books to help in writing college papers or to refresh their memories about historical events or the elements of the governmental and political system.

Traditional perceptions about how textbooks should be used and the extent to which the textbook casts itself as a reference book are two probable factors in causing both students and teachers to think of textbooks in somewhat limited terms. In some schools, textbooks are used as reference works--neatly resting on the shelf until a question or assignment arises that requires their use. While such a use is exceedingly valuable, many of the "new" social studies texts and their companion materials deserve more than such a limited usage.

Perhaps the greatest potential for flexible use of the textbooks reviewed rests in the hands of the teachers. As discussed earlier, the textbooks with companion teachers' manuals and student activity guides incorporate a wide variety of learning activities and approaches. By actively stressing the varieties of approach the textbook and its related materials suggest, teachers can call students' attention to the flexibility and opportunities for learning.

Teachers' manuals often presented strategies that encouraged a more flexible use of the textbooks: integrating a reading of an introduction to a unit of work with supplemental materials from newspapers, magazines and then suggesting a class or small group project that engages the students in active use of the information.

Textbooks consistently provided the basis for assessment of retention and understanding by incorporating test questions and thought-provoking questions in the end-of-chapter exercises. End-of-chapter references and suggestions for additional research projects would also appear to support flexible use.

Textbooks organized around themes could contribute to flexible use. For example, a teacher could encourage small groups of students to select themes for in-depth study using the texts' thematic units as starting points. Such a use would allow students time to more thoroughly explore and consider the issues and ideas attendant to the theme. This sort of flexible use would be a productive strategy for meeting a criticism voiced by several of the students surveyed who commented that there was not enough time permitted to "really get into topics" of interest to them.

The textbooks contained many examples of activities that could be of potential value to parents. One interesting end-of-chapter activity provided the background information, role and process information that would help students or parents organize either a simulation of a boycott or an actual boycott. The product on which the activity focused was coffee, but the process was applicable to a multitude of goods and services. The purpose of the activity is important to consumers of all ages: citizens as consumers can exert influence through organizing, by calling attention to the situation they want to change and by bringing economic pressure to bear on those in positions to make the necessary changes.

Another topical area of potential interest to parents and students alike was that of legal rights of citizens. Several texts addressed this, but with varying degrees of flexibility. The application of information about such constitutional rights issues as "unreasonable search" under the Fourth Amendment should be of interest to parents and other adults in view of the constant reinterpretation of the Bill of Rights relative to current conditions. But without a skilled teacher to point out potential uses of such textbook information, would the students recognize that potential? The team could not easily answer that question without overstepping the perimeters of this study to determine how teachers use texts. Hopefully, future studies will explore this topic further.

TEXTBOOK STUDY: BIOLOGY

INTRODUCTION

Science educators, perhaps more than any other subgroup within the educational community, are facing the challenge of the knowledge explosion. It has become impossible for teachers, researchers and students of the discipline to be fully informed and up-to-date on all scientific developments. Within science as a discipline, the field of biology has seen particularly rapid advances in recent years. Recognizing this rapid expansion, the authors and developers of biology textbooks, teachers' manuals and students' laboratory manuals and workbooks have faced the difficult task of determining what should be taught and how materials should be designed in order to effectively present to students the science of life--biology.

As in many other disciplines, the last two decades have seen efforts to improve science education. One major effort at improvement drew together distinguished educators, biologists and others from a variety of disciplines to address a curriculum reform that sought through the teaching of biology to prepare students to understand and cope with being alive. This effort, known as the Biological Sciences Curriculum Study (BSCS), yielded several textbooks and their companion teachers' manuals, laboratory manuals and films or slides in several versions or interpretations of BSCS recommendations. Common to all versions of the BSCS-generated products is the concern that learners be equipped with basic concepts and understandings of how life on the earth works and can see themselves as a part of life or nature. Non-BSCS textbooks published recently reflect similar concerns for general learner outcomes and a dominant theme among the textbooks involved in this study was that of helping students develop an understanding of science rather than a detailed recollection of facts.

THE ANALYSIS

This study included both BSCS and non-BSCS biology textbooks, teachers' manuals and students' laboratory books.

The four textbooks examined include:

BSCS, Biological Science: An Inquiry into Life. New York: Harcourt Brace Jovanovich, 1980.

Otto, J., Towle, A. and Madnick, M. Modern Biology. New York: Holt, Rinehart and Winston, Publishers, 1977.

Slesnick, I.; Balzer, L. et al. Biology. Glenview: Scott, Foresman and Company, 1980.

Smallwood, W. and Green, E. Biology. Morristown: Silver Burdett Company, 1977.

The present discussion will follow the reporting format suggested by the matrix designed at the Hamburg meeting. To aid the reader, the matrix is reproduced below.

	Format	Presentation	Language	Methodology	Achievement
Stimulation					
Transfer					
Creativity					
Self-Direction					
Linkage					
Flexibility					

In keeping with the social studies component of the national study, this section is a synthesized, exploratory and non-scientific analysis of the four textbooks examined rather than a detailed critique of how a particular text dealt with the important aspects of lifelong learning.

Format

Biology textbooks are usually hardbound. All the textbooks examined for this study were constructed for durability through years of use anticipated by the publishers. The covers presented bright colors and appealing graphics drawn from reproductions of electron microscope color photographs of cells. The title is carried on the face of the cover and on the spine of the book. Laboratory manuals and teachers' manuals are generally paperbound, with cover art corresponding to that of the students' textbook.

Typefaces vary among the textbooks, but all are easily read. The type faces provide an interesting mechanism for heightening the visual appeal to students. Bold face type, sometimes in contrasting colors, is used to direct the users' attention to chapter titles, section subheadings and important or key words and concepts.

Photographs and graphics, both in color and in black and white, play a crucial role in communicating and stimulating interest in biology content. Many diagrams are employed to help students learn about plants, the lower animals and about their own bodies. For example, all textbooks diagram various types of cells and their unique structures and functions. Other line drawing-type diagrams illustrate such complex systems as the human brain, the sensory organs and the nervous, muscular and circulatory systems. Diagrams also are used to make clear to students the directions for the conduct of experiments or to graphically describe a process or a cycle. In most instances the graphics complement and correspond with the concepts being presented, reinforcing the basic biological principles and providing students with a visual representation of the organism being discussed. Laboratory manuals tend toward fewer illustrations, as do teachers' manuals, although sufficient diagrams are presented to provide adequate reference as to form and structure. Slides and films are also available; however, the study did not examine these visual teaching aids.

Presentation

Texts employ various strategies for presenting their biology content; however, all textbooks have chosen to organize chapters and units around central concepts and themes and then to develop those ideas through breaking them into component parts. These units are sequenced so that each forms an organizing framework for the succeeding one. All textbooks are geared to providing the content for a full-year high school biology course.

Most of the textbooks and the companion student materials present a key concept at the beginning of each chapter or in the first chapter of a cluster of chapters forming a unit of work. For example, a unit stressing the unity of life focuses upon the cell as the basic structure common to all life and develops in succeeding chapters the understanding of ways to approach science and science inquiry through learning about cell functioning and related topics.

The textbooks have also chosen to introduce early in their presentations important background information on the history and development of science and scientific method. The discussions of scientific method appear to be of great potential value in developing the kinds of skills students need in order to become successful as lifelong learners. For example, in one text a quite thorough exposition of the scientific method makes it possible for students to approach, define and solve a problem in an organized manner. The delineation of the scientific method is augmented by an actual historical example of its use by early scientists. A second textbook contrasts the early method with the present-day method. By providing the step-by-step description, these textbooks seem to encourage their young users to adopt an attitude of independent inquiry and discovery as their own. This is reinforced in the laboratory manuals as students have the opportunity to apply the method through actually conducting experiments. The notations in teachers' manuals suggest that teachers help students extend these in-school experiences with supplementary data from outside sources.

In most biology textbooks examined, there is some flexibility in the sequence in which teachers can present the content units to students once the groundwork for further investigation through study and laboratory work has been established. As students learn and practice skills in simple experiments, they become ready for more sophisticated investigations that offer them (and their teachers) opportunities to explore topics of particular and timely interest to class members. For example, having covered the care and use of the microscope, students could increase their skills and begin to deal with issues of water pollution and its causes as a current topic by collecting water samples from sources around their community and studying these samples with the microscope. Teachers' manuals or marginal notes in teachers' editions incorporate such suggestions.

End-of-chapter sections uniformly provide review questions. Some also give a brief summary of the chapter's main ideas. Three textbooks also incorporate bibliographies in these end-of-chapter exercises to stimulate independent readings from such sources as Isaac Asimov's A Short History of Biology, Asimov's Biological Encyclopedia of Science and Technology and Cottrell's Portrait of Nature: The World as Seen by Modern Science. Periodical source suggestions such as Scientific American, Natural History and American Journal of Biology seem to aim at familiarizing students with current sources of information and to encourage them to use sources other than the textbooks and their companion products.

Another strength of presentation observed was in end-of-chapter sections dealing with applications of principles and concepts. In one instance, this is designated as "research," in another it is "independent study" and in two others "application" and/or "analysis." Here, it would be difficult to gauge the actual impact of such activities since the degree of emphasis they receive would depend greatly upon the teacher. As a whole, biology offers great potential for promoting lifelong learning skill development among students. Its textbooks, however, are primarily focused upon presenting biology content and do not captitalize on that potential as fully as those concerned with lifelong education as an outcome of compulsory schooling might wish.

Language

Can the highly specialized language requirements of a scientific discipline contribute to the development of language skills required for lifelong education? The language of the biology textbooks reviewed during this study suggest that it is possible to communicate and explicate the scientific vocabulary while demonstrating, developing and reinforcing language skills important to learning over a lifetime.

The textbooks examined are intended for use by average tenth grade students. Although a readability check was not carried out on any of the textbooks or companion student materials, the language does appear appropriate to that grade level. Clear explanations of terms and processes would enable most tenth grade students to understand fairly sophisticated concepts and principles. In some instances the language has a simple, almost elegant directness that impresses the reviewers. For example, one text, in presenting its discussion of the research method states: "You can't solve a problem unless you see that one exists." Later on the same text, having explained atoms and molecules, introduces the concept of chemical bonds with the statement, "Chemical bonds are forces that hold two or more atoms together in a molecule." Another textbook, in discussing the combinations of atoms, states: "Let's look at how the atoms in three different substances--air, water and diamonds--are put together." With this clear and straightforward statement the students are led toward an understanding of molecules as a basic structure of both living and nonliving things. This direct style avoids confusing or "turning off" the learner by avoiding the use of jargon or overly technical language.

All texts provide pronunciation guides, usually in parentheses immediately after the technical term itself appears in the sentence. These technical terms receive emphasis through the use of bold type. Two of the texts appear to avoid presenting too many such terms in a single paragraph, presumably to minimize the chances of overwhelming or frustrating the users. Glossary sections also are used as devices to aid understanding of terms without use of outside resources such as dictionaries.

Most of the texts use an informal and conversational tone and style. By using language that students feel comfortable in using, the books' explanations seem more likely to be understood. For example, in describing the structure of moss, one text says: "You can tell real moss if you look closely. It seems to be everywhere--in the cracks of shaded sidewalks, on the ground under trees and on rotting logs. A clump of moss is really a bunch of tiny individual plants..." This is an accurate, yet jargon-free explanation stated in just the manner of speaking that most students would use if called upon to provide an explanation of the structure of moss. Another text asks students, as a part of a lesson on genetic recombination, "What do you think would be the result of a cross between a female (fly) with white eyes and a male with a yellow body?"--a question using simple language to stimulate thinking about a very complex idea.

All textbooks and students' manuals provide opportunities to practice their language skills through responding to questions in the end-of-chapter reviews. Responses could be through oral or written means. Two of the textbooks include objectives statements for each chapter at its beginning. These are stated in terms that make the development and use of language skills an explicit part of the intended learning. These objectives begin with words such as "describe," "discuss," "explain," "tell" and "give examples." Teachers, in the marginal notes of teachers' manuals, are urged to "ask the students."

Language is also used to stimulate curiosity and to reinforce the scientific method of inquiry. Students are constantly being asked "What do you notice..."; "What is the relationship..."; "What evidence should be found?" and "How is it different?"

Reading is another language skill reinforced by all the textbooks. While tenth grade students reading at tenth grade level would find adequate challenge in reading the material presented, it appears that presenting the material effectively to students of lower grade-level reading ability would require some additional preparation and effort from teachers. Students with higher reading abilities would find additional challenging material in the outside readings the textbooks suggest in the end-of-chapter activities.

In summary, the textbooks seem to succeed in presenting the "science of life" in terms that enable most students to understand and incorporate its method and apply it to learning in other areas. But it should be kept in mind that not all students make the connection or link between the terms, the method and more general problem-solving--teachers must help young textbook users see the potential for application in future learning activities.

Methodology

Biology textbooks aim to prepare students for the hands-on learning experiences in the laboratory. Starting with the introduction to each chapter, the purposes or learning objectives are stated. This clear identification of the learning purpose models for students an essential strategy they will call into use as lifelong learners--the setting of learning goals for themselves.

Teachers' manuals present an outline and a rationale for each chapter, along with suggestions for teaching activities aimed at helping students increase their understanding of the concepts presented. Most of these are in the form of discussion topics, reviews of previous points, highlights of the vocabulary presented in the chapter or more details about pictures, charts or diagrams. Laboratory experiments and supplementary activities provide step-by-step procedures that help students apply principles and concepts. Thus, the textbooks and laboratory manuals are designed to be used together; taken separately neither would provide students with a thorough understanding of the topics at hand.

Most of the biology programs use a combination of approaches--didactic, guided discovery and inquiry--that provides students with more than one way of assimilating the content. Students have opportunities to hear lectures, view films and read the texts and supplemental resource materials. Projects and experiments may be done individually, in small groups or teams, or with the entire class. Group discussions are a means of helping students develop such lifelong educational skills as critical thinking and the ability to appreciate the role of biological inquiry in society. Examples of the latter are noted in captioned photographs of scientists at work and in featured short articles or descriptions of scientific research addressing some of society's most fearsome problems--curing cancer, eliminating birth defects and increasing food production.

Teachers' manuals often suggest optional units of work that complement the basic content. These may be used to individualize the program and to enrich it. Thus, the more able students may advance at their own pace, while slower students might be better accommodated through alternative approaches to learning the content at hand.

Achievement

Biology as a discipline strongly deals with and encourages both students and teachers to evaluate the learning and to measure student progress. Both textbooks and students' laboratory workbooks include end-of-chapter or end-of-activity questions that allow students and teachers to determine student comprehension of the material presented. Some texts include chapter or end-of-activity questions that allow students and teachers to determine student comprehension of the material presented. Some texts include a chapter test section. One text includes brief review questions frequently spaced throughout the chapter. This seems to be a valuable strategy for allowing students an almost constant yardstick for measuring progress and understanding. With this technique, a student should not persist in a misunderstanding and arrive at the end-of-chapter test ill-prepared.

Assessment of achievement is addressed in several forms. Pencil and paper testing include multiple choice, true and false, supplying the right word in the blank spaces, and writing definitions of biology vocabulary words and matching vocabulary with definitions. Oral discussions of topics suggested in teachers' manuals provide opportunities for teachers to probe the depth of student understanding of key concepts. Laboratory activities also provide immediate assessment and feedback to students and, at the same time, opportunities to correct misunderstandings and improve skills. As students conduct experiments, they are required to answer the questions in the laboratory workbooks; thus, as each step is completed, learning and observations are assessed and achievement may be noted by the student and by the teacher.

Several biology programs provide a packet of tests in a reproducible format or test booklets that provide sample test questions and procedures from which teachers can choose items to help determine the extent to which students have mastered concepts or skills. Many testing procedures support skill development by requiring students to conduct observations and experiments using the inquiry method. Mastery of such skills certainly can contribute to skills in learning, but few texts or laboratory manuals explicitly present them as requisites to successful lifelong education.

ANALYSIS FROM THE LIFELONG EDUCATION PERSPECTIVE

This section discusses how biology textbooks and their companion materials address lifelong education skills and attitude development in their users. The key topics suggested by the matrix are merged with those of the tally instrument and used as a reporting outline with the tally instrument's.

Matrix topics include:

- Stimulation--encourages interest, curiosity
- Transfer--encourages application of education to practical life experiences
- Creativity/Self-Directions--enhances self-directedness, independent learning and creativity
- Linkage--serves as a bridge to other disciplines
- Flexibility--facilitates use in many situations by students, teachers, parents

Stimulation--encourages interest, curiosity.

The biology textbooks are among the most colorful and visually appealing of all textbooks. The photographs and diagrams are plentiful and invite the user to look through them entirely before settling down to the printed materials. As a field of study, the science of life appeals to most students because it describes and teaches about the living, vital processes they can see unfolding around them every day. The currency and relevancy of biologically solvable problems and issues are readily apparent to students who hear them discussed at home and in the media. Textbooks reviewed are quite up-to-date and consistently incorporate discussion and visuals designed to help motivate students to further inquiry and exploration through the texts and the supplemental resource materials they recommend. Current concerns with which these textbooks deal include cancer drug research, genetic research, water and air pollution, food additives, and right and left brain studies.

The open-ended inquiry approach of some biology textbooks, when used by careful and patient teachers, seems to have potential for motivating students to want to learn more and to become more independent in their learning efforts.

The varieties of hands-on learning experiences offered through the laboratory work should, with the aid of a knowledgeable teacher, provide students with enough successful doing to stimulate and maintain interest.

The thematic organization of the texts appears to facilitate curiosity and support investigation by suggesting applications of central concepts to situations with which students are familiar. For example, a unit of work organized around a major biological principle, the genetic continuity of life, uses discussions about pets, vegetables and families as vehicles for developing an understanding of patterns of heredity and the presentation of various theories of evolution.

Transfer--encourages the pupil to proceed beyond his or her immediate environment, aiming at an open attitude to life and application to life as the student experiences it.

By their very nature, biology texts repeatedly encourage users to approach life with openness and curiosity, not only by asking questions in the texts themselves as well as in a review section at each chapter's end, but also by asking questions whose answers are direct applications of principles and concepts that have been explained.

Textbooks often express their goals in terms of seeking to prepare students to cope with living and give them a background in science that will enable them to pursue careers in other fields, prepare for college and apply biological concepts to the solving of social problems in the community and beyond the classroom. Yet, few references are made in the texts to using community resources for learning. One suggestion appears in a teacher's edition which asks students to investigate industries dependent upon organic compounds--a suggestion which perhaps only hints that site visits to community industries would be the strongest approach to finding the needed information. Further, most biology textbooks do not often encourage the users to seek information beyond that which is available within the school's resources or from the text itself, with the exception of the suggested additional readings at the end of the chapter. Teachers' manuals, however, do suggest optional community involvement activities, generally recommending that outside speakers be brought into the class to talk with students.

The development of an open attitude toward life requires that individuals have the ability to give thoughtful consideration to alternative points of view. Perhaps the strongest example of an explicit effort at addressing this occurs in the textbooks' discussions of how life began on earth, yet whether the authors' pluralistic values actually cause the users to consider alternative points of view is questionable. Here again, a great deal depends upon the manner in which the teacher guides the discussion.

Another potential area in which textbooks could contribute to practical applications to life as the student might come to experience it is in the area of preparation for careers and for the various life roles:

- --family member
- --citizen
- --friend/neighbor

--worker
--consumer
--volunteer in community service

The textbooks are not consistent in the way careers are presented. Most show photographs of scientists of various specialities at work. In the teachers' manual of one textbook, a listing of career areas is given but it is clearly up to the teacher to present them to students as topics for discussion. One text devotes a two pages to careers, describing duties, level of training required and a forecast of the occupational outlook for the 1980s. In some texts, references are made to the work of physicists, zoologists, anthropologists, and so on, but there is little explicitinformation that deals with career preparation. A suggestion appears for teachers that interested students might research the work of cytologists and histologists.

Other than relating basic biological information useful in adult life (from genetics and infectious disease to the existence of poisonous mushrooms, etc.), the texts do little to relate content to preparation for roles as family member, worker or volunteer in community service. In one discussion of ecology, however, the text shows clearly that as citizens and consumers, adults have responsibilities for maintaining the environment. Several consumer tips appear, covering such facts as, that in stores, open clam shells indicate dead clams; that an efficient method for helping broken bones to heal is the use of a "walking" cast; and that insecticides may prove to be more harmful than helpful. Similarly, few explicit references to constructive use of leisure time are given, although the described procedures for grafting and budding plants would be helpful to gardeners, should they wish to experiment on their own.

Linkage--serves as a bridge to other disciplines.

Most biology textbooks seem to link and help students relate their content to that of the other sciences. One text, for example, begins with an explicit discussion of the interrelationships among the sciences. Specific examples appear which make clear that even in a biological setting, principles of physics and chemistry are necessary to use, as are the understandings of social and industrial factors. However, another text in its instructions to teachers warns instructors to avoid diverting the students' attention away from biology by introducing too much from other disciplines. Yet, much of the relevance of biology can be that some of its aspects--the biomedical areas of inquiry, for example--hold the clues to the solutions of some serious social concerns. Thus, while explicit examples in textbooks of linkage with the social sciences may be few, implicit linkages are plentiful.

Notable examples of these implicit linkages are:

- discussions of alcohol and drug consumption and the physical and social effects of prolonged abuse
- discussions of inherited mental illness
- discussions of technologies and medication that enable persons with diseased organs to continue living socially useful and personally satisfying lives

History and biology are continually linked in all texts as the authors seek to help students understand human progress in knowing more about humanity and the environment.

Linkages with the arts are rather subtle ones in biology textbooks. There is an apparent dependence of the textbooks on the use of the artistic medium to present and reinforce concepts and principles. However, no explicit references were found that state how the use of art contributes to the understanding of biology and other sciences.

A chapter discussing algae includes an objective that immediately draws the users' attention to the economic importance of algae. This is supported in the narrative introduction that cites the need for new sources of food to support a growing world population and the potential of algae as a food source.

This is perceived to be an area that could be profitably strengthened in all textbooks and student materials.

Creativity and self-direction--enhance self-directedness, independent learning and creativity.

Do biology textbooks encourage their users to become self-directed, independent learners? To answer this question, the reviewers considered the skills that self-directed learning as a lifelong educational strategy requires. With these in mind, textbooks, teachers' manuals and students' laboratory workbooks were examined to determine their approach to developing these skills. The skill areas examined were:

> Basic (academic) Skills--reading, writing, computing, speaking, listening, analysis/critical thinking, synthesis, evaluation
>
> Attitudes--cooperation, learning as personally satisfying, valuing education, weighing personal values, goal-setting and self-assessment

Behaviors -- information seeking, problem-solving, independence, initiative, using community resources for learning

(The area of Life Skills was reported in the discussions on Transfer and Linkage.)

Flexibility--facilitates use in many situations by students, teachers parents.

Bilology textbooks seem to have strong potential for being used flexibly by teachers and parents. The extent to which students, left on their own, would give it flexible use while taking the course is less certain. As reference sources, these colorful textbooks could be of value to parents, particularly as sources of biomedical-related information. For example, a parent with a medical problem might find it helpful to review what the textbook has to say about the location and functioning of healthy organs. In another instance, parents and students, on a recreational outing, might find it interesting to read about the plants, birds, insects and animals observed in the countryside. One textbook displays color photographs of common orders of North American birds.

The organization of textbooks around central concepts and themes seems to enhance their potential for flexible use in the classroom. Teachers can choose sequences and strategies of instruction that allow them to be responsive to students' interests and needs. For example, text material could be presented in a classroom lecture format with coordinated laboratory assignments. However, the same content could be approached using a technique requiring very little lecturing and emphasizing guided discovery. One teachers' manual edition offers suggestions for pacing the activities and lesson to meet the needs of students of low, average and advanced abilities. Most teachers' manuals also offer suggestions of how activities can be done with learners working alone, in small groups or as an entire class.

As this report has stated before, much of helping students recognize the creativity and flexibility in textbooks depends on the teacher. The single textbook may be used in a rigid, lockstep fashion or in a responsive and innovative way, with the teacher's attitude being the deciding factor.

Basic Skills

Biology textbooks and companion materials make strong contributions to the development and practice of some basic academic skills. Reading, for example, is a skill that is emphasized. The nature of a text necessarily requires reading to be practiced. Suggested "related readings" at the end of each unit or chapter, while not required, also encourage the practice of reading. Glossary and word lists in the text facilitate the development of vocabulary, and helps such as a section entitled "How to Read Biology" aid students in learning how to deal with the specialized reading of the discipline. The general techniques presented have utility for other disciplines as well, but because they are presented in the teachers' manual as a teacher-initiated activity, it is assumed that the teacher needs to point out to students the value of the exercise relative to other disciplines.

Writing is another academic skill that most biology textbooks require students to use. In those texts that included beginning-of-chapter purposes or objectives, references to writing appear. For example, students are asked to write a description of the function of chlorophyll or how a starfish regenerates. Questions for review at each chapter's end can be construed as encouragement to practice writing skills. Writing is also required in recording observations in the students' laboratory workbooks. Computing skills receive little attention other than as part of the experiment/observations. Students are asked to observe "How many..," to classify objects according to measurements, or to compare sizes rather frequently.

Speaking and listening skills are used primarily during work at the beginning or ending of each chapter or unit. In most instances, students listen to the teacher's lecture introducing the unit or to other students' explanations and discussion at the conclusion of each unit of work. Suggestions in the margins of the teachers' editions include holding a debate on various issues and asking for explanations. Questions for review at each chapter's end may also be answered verbally, should the teacher direct.

A number of textbook chapters lead users through analyses and critical expositions of such concepts as the scientific method and spontaneous generation. The question of how life began on earth for example, is not answered conclusively, forcing the user to develop and practice critical thinking. Presumably because these are scientific texts, many times there appear both suggestions to the teacher to have the students analyze or critically discuss issues as well as questions in the text that require analysis and critical thinking.

Review and application sections at each chapter's end require that the users develop and practice the ability to synthesize what they have just studied. Biologists constantly evaluate--the geneticist evaluates the desirable traits of plants or animals for use in hybridization, ecologists evaluate the positive and negative impacts of man on his environment and so on. Portrayals of these types of issues show the user that processes must be examined, but the texts do not directly require extensive evaluation skill development or practice that are so important to lifelong, self-directed learning. Rather, the evaluation could be viewed as teacher-influenced and geared toward limited assessment of content retention since question and answer test format is dominant. Laboratory work seems to provide greater potential for self-assessment in that step-by-step procedures are sequenced so that the student must correctly prepare or carry out preliminary steps before achieving the desired results from subsequent steps.

Attitudes

Opportunities for learning cooperatively with others are probably most frequent in the biology laboratory setting. In the textbooks themselves, cooperation with others is specifically discussed only occasionally. Two natural references were encountered: once as a prelude to the study of sponges, noting that independently functioning cells act together as an organism, and a second, in relation to the interdependencies within ecosystems.

Little explicit encouragement to view learning as a source of personal satisfaction appears in these texts.

Because these texts explain biological functions, they implicitly espouse that knowledge is valuable, but references to the need for and value of education as such do not appear to be within the scope of the text.

Implicit examining of personal values occurs especially in chapters which deal with man's impact on his environment, but there is generally inconsistent encouragement to examine one's values.

Specific learning objectives are set forth for textbook chapters, but whether these objectives serve as encouragement to set goals or standards of accomplishment is open to question. Self-evaluation could be encouraged because questions for review are supplied and can be used as a self-check, but whether readers choose or teachers urge them to use the questions in that way is difficult to predict.

Behaviors

The textbooks, being themselves informational resources within the school context, do not particularly emphasize seeking information beyond the school. The "related readings" found at the end of chapters do, however, have the potential to help students find other printed information sources.

The presentation and practice of the scientific method contributes greatly to the development of problem-solving skills. In the mastery of the method, students acquire skills that stand them in good stead as lifelong learners. Occasional suggestions in the margins of the teachers' editions could stimulate students to initiate learning activities. A few times reviewers noted provocative questions appearing in picture captions which would intitate learning activities. A list of "related readings" at the end of each unit could serve to encourage the user into independent learning, but there are few other explicit references in the texts. Most often the teachers' manuals include suggestions of hands-on projects--building a model, for example--that students could complete independently at home.

The teachers' manuals are also the strongest component in the use of the community's resources for learning. Many suggestions, such as visiting a laboratory, visiting a hospital or an agricultural station, if followed, would help students see the potential for learning outside the school. It should be noted, however, that generally the texts suggest inviting outside specialists to speak during class sessions as the dominant way of using community resources.

ANOTHER ANALYSIS APPROACH

ANOTHER ANALYSIS APPROACH

This section departs from the reporting format suggested by the UNESCO Institute for Education. It is organized according to the items included in the tally instrument in order to demonstrate through a few examples how each item was or might be approached in a textbook, a teachers' manual or a student activity guide. The reader is referred to the Methodology Section or to the Appendix for a list of items or the instrument. The analysis draws upon examples from across all textbooks analyzed as well as from teachers' manuals and student activity guides.

1. Behavior

1.1 Information seeking:

All texts involve the student in seeking information in the school context. Generally, these other sources include the dictionary, an atlas, charts, maps and reading materials from the school library. Less frequently is the student encouraged to go beyond the school context into the community.

a. In the school context:

> The Indians, Spanish, French, Dutch and English colonists left their traces in place names and other words. Using an atlas and a dictionary to assist you, make a collection of place names and words that show these origins.
> Would you say that the American Revolution was caused more by (a) economic conflicts or (b) political differences between the colonists and the mother country? Find evidence in your textbook and library resources to support your position.

b. Beyond the school context:

> Watch a movie made during World War II about the war or read magazine accounts written during the war. (a) Do the magazines or the movie express a viewpoint about the war? (b) Do they try to rally support for the war? (c) Do you think that movies and other media should be used to influence public opinion?

Assume that you were asked to write a brief report on someone who played an important role in the colonization of the Americas. Choose one particular individual and then find out how much information about that person is available in your local library. List the materials you found and then prepare a concise outline that you would use if asked to write such a report.

1.2 Development and use of problem-solving skills:

Several teachers' manuals and student activity guides address problem-solving skills, although few exercises incorporate all aspects within a single activity (i.e., identify problem, formulate hypothesis, gather data/evidence, interpret evidence, validate evidence, draw conclusions and make a prediction).

Why is a unicellular organism more versatile than a multicellular one? Speculate on the effect of a salt water environment on a fresh water cell and vice versa.

1.3 Initiate a learning activity:

Many learning activities are explicitly addressed in the texts; the majority of these focus on reading and writing skills.

Prepare an advertisement that you think might have been used to attract people to settle in one of the 13 original colonies. Be sure to identify the colony you have chosen and prepare your advertisement so that it would appeal to the type of people who actually settled in the colony.

Construct a bulletin board display showing the Bill of Rights in action today. Use illustrations from newspapers and magazines or make your own drawings or cartoons.

Design a cell from materials around the lab.

1.4 Independent learning:

Both textbooks and teachers' manuals contain suggestions for independent learning activities.
Do research to find out more about the role of women in American Society in the late 1700s. Why do you think few women tried to obtain political rights during this period? What does this tell you about American values in the late 1700s?

Research and write a report on an early biologist.

In a diary, record your activities for a week. Then review the rights and freedoms guaranteed by the Bill of Rights. How does each right affect your daily life?

1.5 Look for relationships among disciplines:

Teachers' manuals and students' activity guides demonstrate the strongest, most explicit strategies for helping students see relationships among diciplines.

All sciences are related. Chemistry is needed to understand the growth of organisms.

You will need a biology text to do this activity. Religions sometimes forbid their followers to eat certain foods. Many of the dietary laws may have been written to protect the health of the people. Find information about trichinosis. Describe it and draw a diagram of the life cycle of the organism that causes the disease.

1.6 Utilization of resources in the community for learning:

Textbooks, teachers' manuals and student activity guides present many uses of community resources for learning.

As a class project, find out when your town was settled and who settled it. Why was the site chosen? Are there any buildings dating back to this period? What can you learn from inspecting old houses or artifacts (things that were made during the period) you are interested in?

Interview your grandparents or older people in your community who remember the Great Depression of the 1930s. How do they describe life during the depression and the New Deal? How do their impressions compare with those you formed from your reading and studying?

Investigate what the city council does in your community. Invite a member of the council to speak to your class.

List various community meetings, their times, dates and locations. Assign two students to attend each meeting. Each student should observe and complete the observation record they develop and prepare a written report. Ask three or four pairs to share their observations with the class.

2. Life Skills

2.1 Preparation for careers in the field or discipline:

Few textbooks, teachers' manuals or student activity guides demonstrate great attention to preparation for careers in the field of study. However, some examples are present.

Photographs show scientists at work, while captions discuss the task depicted.

Related careers are listed.

Invite a biochemist to speak about biochemistry as a career.

Research what a cytologist does.

Pretend you are one of the characters listed below. Write a short essay describing your life and your work...

An important skill in social studies is learning new words and terms, especially those which label concepts or ideas (socialization to the discipline).

2.2 Preparation for higher education:

All materials can be viewed as related to preparation for higher education. However, few references were found that explicitly urged students toward college.
In preparation for a role-playing activity: ...After college, you might want to enter politics.

References are made to educational attainment levels among women, whites and non-whites, as a part of a lesson on status.

2.3 Preparation for vocational training:

Few texts or materials seem to deliberately address vocations, occupations or training and few examples are cited.

Trainees receive two-year courses in such skills as carpentry, electricity or plumbing. This person is learning to be a welder. What industries would need welders?

2.4 Preparation for adult life roles:

A number of the textbooks, teachers' manuals and student activity guides deal with adult life roles. The examples are cited according to the roles to which they relate.

a. Family member

Few of the textbooks deal directly with preparing the student for the adult role as family member, although the family is cited as the basic unit of society.
The basic unit of human social contact is the family. The unit may be either a nuclear or an extended family.

Heredity in humans, the gene pool, birth defects and the need for genetic screening are mentioned.

b. Citizen

Find out about the anti-pollution programs of your city and state. What are some of the problems your city and state face in fighting pollution? What kinds of things can you as an individual do to help prevent pollution?

Hold a classroom election to choose the "outstanding American of the 1920s." First, nominate candidates. Then, prepare campaigns. Next, hold the election. Finally, analyze the results.

c. Friend/Neighbor

Most references to "neighbor" are related to the neighborhood and citizen action or neighborhood associations formed to advocate for local interest and improvements.

d. Worker

Pretend you are a member of a panel of reporters who have invited President Andrew Jackson to appear on Meet the Press. Prepare a set of five questions you would use to interview Jackson. Be sure that your questions cover the major issues--the bank, the spoils system, and relations between national and state government. Prepare answers to your questions and compare your questions and answers with the ones other members of your class have suggested.

Have students set up a "conference on Latin America" at which the following papers are presented:..(a) A reporter forced to leave his/her country describes the exploitation of the people by the government, landowners and foreign investors. (b) A Catholic priest who has been actively involved in revolutionary activities supports his behavior on the basis of the history of social action in the Church. (c) A sociologist describes the composition of the Latin American family. He/she includes information of ways family loyalty and distrust of others have influenced hiring, choice of banks, political appointments, etc. (d) A cultural anthropologist traces the history of machoism to Spain and Portugal. She/he may present the view that upper-class women have traditionally been the most protected and least free, while working-class women have had to work. Imagine you are a journalist.

e. Consumer

Indirectly, most texts consider the consumer role.

Surveys also provide important evidence about the effect of advertising on consumers.

Consumers soon began to organize. The aim was a meat boycott. Members felt that if Americans stopped buying meat, the supply would increase and the price would go down.

f. Volunteer in community service

Support in the form of time and effort devoted by volunteers is another important resource. For example most local elections are run by loyal volunteers.

Community involvement: volunteer in an agency for the retarded

The volunteers participate as supporters in the group effort. Supporters are necessary for groups to achieve their goals. Supporters carry out the tasks once decisions are made. A good supporter:

1. Is reliable
2. Follows directions
3. Works hard
4. Works well with others

The Supporter Role exercise helps students practice the role through a simulation designed around raising support for services to senior citizens.

2.5 Preparation for constructive use of leisure time:

Look through your weekly television or movie listings. Approximately how many shows have a Western theme? Why do you think the old West has been such a popular theme for movies or television shows? Do you think these shows give a accurate picture of life in the old West? Why or why not?

As a hobby, grow mushrooms.
(instructions followed)

3. Attitude

3.1 Cooperate with others:

Many opportunities for small group cooperation are found in the end-of-chapter activities and in teachers' manuals.

As a class project, find out when your town was settled and who settled it. Why was the site chosen? Are there any buildings dating back to this period? What can you learn from inspecting old houses or artifacts (things that were made during the period) you are interested in?

3.2 Approach life with openness and curiosity:

Science textbooks strongly encourage this.
Do you believe the mere presence of vital substances leads to life?

Social studies

How can citizen communication play an important role in the state legislative process? Describe some ways in which you might participate in state politics.

Renaissance thinkers emphasized relying on one's own observations rather than accepting unquestioningly the judgment of others. How observant are you?

Compare the diagram of the universe on page__ with the diagram on page__. How do they differ? How do they differ from the current view? How can you account for the difference? What have you learned through these activities that you can apply to other courses and other areas of life?

3.3 View learning as a source of personal satisfaction:

Evaluating decisions of the past can help us make effective decisions in the future. We should try to decide what might have happened if people had made different decisions and events had turned out differently.

What have you learned through these activities that you can apply to other courses and areas of your life?

3.4 Recognize the need for and value of education throughout life:

Apply what you have learned from this lesson to the real world. State the position the U.S. should take in current negotiations.

Which of the two writings gives you more help in understanding modern problems and conflicts in Latin America?

Would it be possible for the Incas to survive in the modern technological world by using only their old ways? Why or why not?

In three generations, what elements of U.S. culture do you think might still remain? Why?

How can formal education affect a person's job status? Those who have completed more years of schooling tend to have more knowledge, to acquire more skills and to use their knowledge and skills to gain higher status jobs.

Since evidence is such a valuable commodity to you as a citizen, it is important for you to learn how to work with it. You should also learn how to generate or produce evidence by compiling information from your own observations, surveys and interviews.

You can locate many valuable sources of information in a public or school library.

What advantages would Latin America gain from a higher literacy rate? What problems do governments face in providing education?

3.5 Set goals or standards of accomplishment and engage in self-evaluation (self-assessment) opportunities:

End-of-chapter activities provide self-assessment opportunities.

Summarize the exercise to see how well you have mastered the vocabulary.

Review the three types of bargaining. In a group in which you participate, practice bargaining skills. Report to the class on your activities.

How well do you know the vocabulary? Make a crossword puzzle using vocabulary words.

3.6 Examine values:

What are the major consequences that action in regard to human rights questions would have for the global political system?

Can universal value principles be generalized across many cases?
Why or why not?
Do you think education should provide you with the means of making a living or should it enable you to understand yourself and society? Explain.

Keep a diary of your own actions during a week. See how they fit the value principles you have formulated in this unit. Discuss various alternative actions you might have taken that would violate or better uphold your principles.

In general, whom do you respect more, people who inherit their money or people who "make it" on their own? Explain how your answer relates to your belief about America and opportunity.

Discuss whether or not immunization should be compulsory.

3.7 Consider alternative points of view:

The author of your textbook seems to know what happened in Germany in 1517. If you wanted to know what happened in Germany in 1517, you could read various books. If you read the following five books would they all say the same things? Think carefully about the time differences and possible points of view of the various authors before answering.

Imagine that a Confucianist, a Taoist and a Legalist were being interviewed about the best ways to solve certain modern U.S. problems. Fill in what you think would be the answers of each.

Use as many different ways as you can to explain changes of life through the ages.

4. Basic Skills (academic)

4.1 Reading:

This activity will teach you a five-step strategy for reading this textbook or any textbook.

Step 1. Before starting to read an assignment, skim the headings quickly to see what the material is about.
Step 2. Make up a number of questions, based on the headings, that you think the chapter will help you answer.
Step 3. Now read the chapter.
Step 4. Try to answer all the questions you wrote.
Step 5. Review the reading material for any questions you could not answer.

This exercise will help you learn how to read about biology. Read some accounts written by slaves during the 1700s describing their own lives. Based on these primary sources, what do you think the life of a slave was like? Did your reading change any of your ideas about slavery?

Read the section entitled "The Peace of Paris." Choose another title from the list below, then defend your choice: (a) Franklin's Triumph; (b) War Debts; (c) America and France.

Read and report on Bury My Heart at Wounded Knee by Dee Brown. An Indian has stated, "The whites told only one side. Told it to please themselves." Do conquerors always do that? Explain.

4.2 Writing:

Write a paragraph on homeostasis.

Write a report on your observations of differences between cells.

When you are writing a report, you will find it helpful to summarize the ideas you've read by outlining them. The following shows you how to organize an outline:

I. (main topic or idea)
    A. (subtopic or idea of I)
        1. (subtopic or idea of A)
            a. (subtopic or idea of 1)
                (1) (subtopic or idea of a)
    B. (subtopic or idea of I)
II. (main topic or idea)
III. (main topic or idea)

Write a 30-second TV commercial promoting one of the progressive reforms. Divide your paper into two columns, one for the spoken lines and one for the camera shots.

In your own words, rewrite the Toleration Act of 1649 so that it establishes complete religious freedom.

Look at the chart on page 47. Pick one colony from each geographic group (New England, Middle, Southern), and write a short paragraph developing the information given in the column labeled "Reasons Settled."

4.3 Computing:

Mapping: Look at the map on page 21. Use the scale of miles and kilometers to decide approximately how large the land grants of 1606 and 1609 were. Give your answer in both miles and kilometers.

In the space below set up a continuum of height ranging from short to tall.

Which profession had the highest percentage of female students in 1960? Which had the lowest? Answer these same questions for 1974.

Prepare graphs and tables to profile your community showing income levels, occupations and types of businesses.

4.4 Speaking:

Give an oral report on photosynthesis.

Debate the topic of whether or not research methods can be used to solve everyday problems.

Do a project on the scientific aspects of coal or on the history of coal as a source of energy. Present your project to the rest of the class. After the report, discuss with the other students why coal is a valuable resource.
Interview one or more union members in your community and report on your interview.

Once you have constructed an interview schedule and chosen respondents, you are ready to conduct your interview. The following checklist of interview techniques will help you. (excerpts)

- Be friendly and impartial.
- Ask all the questions and discuss any answers that seem unclear.
- Whenever possible, interview people alone, in as comfortable a setting as possible.
- Be sure to thank the people you interview for their cooperation.
- Review the interviewing process. As a participant in local politics, why is that an important skill to have?

Help plan a debate on reconstruction. Join either the team representing the radical Republicans or the team representing the moderate Republicans. After each side has presented its point of view, try to work out a compromise between both groups that you think would have been effective in reconstructing the South.

4.5 Listening:

Write a series of five radio advertisements supporting the candidacy of Thomas E. Dewey for President in 1948. Each ad should run no longer than a minute. By "listening" to the ads, your classmates should be able to identify five weaknesses of the Truman administration that would be corrected if Dewey were elected President.

Play for the class, records or tapes of music by composers mentioned in this unit. Explain how the music reflects the national character of each composer's country.

Examples too numerous to cite begin "Tell the students," an indication that students are required to use listening skills.

4.6 Analysis/critical thinking:

Use the dictionary to define the following words: philanthropic, autonomy, covenant. Then, relate each of these words to a person or event described in this chapter.

The fact that there was an increased demand in Europe for Asian goods and the fact that the old trade routes were difficult, dangerous and expensive are two unrelated facts. Do you agree or disagree? Why or why not?

Conduct a controlled experiment using the research method.

Assign students to write an in-class essay in which they analyze why the skill of interpreting evidence is an important skill. For example, how might the data studied in class affect the distribution of resources at the state and local levels? Do the figures indicate that local governments should allocate funds for the construction of additional schools? Why or why not?

Activity Objectives:

1. To analyze the purpose and means of constitutional change
2. To distinguish between formal and informal constitutional change

Write a short paragraph analyzing why each article demonstrates one of these principles.

4.7 Synthesis:

On the line following each description, write the name of the country described. Read the chapter and refer to the map. Then, look at the map on the next page to find the name of the country---In order to answer parts A - H you had to combine information or data from your reading and two maps. This is called synthesis.

Pretend that you are the Soviet leader, Josef Stalin. Write a formal note to Roosevelt and Churchill protesting the decision made at Casablanca to concentrate Allied strategy in the Mediterranean rather than on a cross-channel invasion. Your note should contain arguments against the decisions.

Design an experiment for diffusion and osmosis.

4.8 Evaluation:

Assume that it is the year 1890 and you are appearing on behalf of consumers and small business owners before a Congressional committee that is considering the Sherman Antitrust Bill. How would you argue for its adoption?

(a) If a person disagrees with a society's values, should that person leave that society? Comment. (b) How should society regard such a person? Why? (Although a standard is not actually given here, it is implied. Most of the other questions that approach evaluation are on this level.) Compare the system of government used by the Iroquois with the system used by the colony of Virginia. What did the two systems have in common?

Activity 7 asked for your own opinion. To answer it, you exercised the skill of evaluation.

Taking all the criteria into account, what is your evaluation of European colonial rule?

What changes would occur in his or her life if an African Muslim were converted to a traditional African religion? (prediction)

RECOMMENDATIONS

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RECOMMENDATIONS

Based on an informal analysis of the data, the following recommendations are made to provide school texts with the potential for fostering life-long learning skills, attitudes and behaviors:

1. While all texts do a thorough job in covering important historical/political facts and figures, more effort needs to be made to relate this information to the students' own experiences and to relate the content to present and future activities as family members, workers and citizens. Incorporating more questions on the synthesis level would not only help students convey ideas, feelings and experiences to others; it would also help students see the interrelationship of concepts and facts and apply these to their own experiences. Synthesis questions encourage the student to put together ideas, elements and parts so as to form a whole framework in which in-school learning and informal learning come together with meaning for the individual and her or his experience. Some specific examples of activities on the synthesis level include:

- Developing a way of communicating ideas, feelings and experiences to others
- Writing assignments that require the student to organize his or her ideas and statements about a topic
- Developing a plan of work
- Developing a set of abstract relationships so as to classify or explain a particular phenomenon
- Formulating new hypotheses based upon an analysis of many factors
- Modifying new hypotheses in the light of new factors or evidence

2. Basic skills in math and communication need more emphasis. Greater numbers of activities which involve students in computation and communication would help support these skills while at the same time show relationships among diciplines. Concurrently, these activities would allow for greater variety which would then provide students with options appropriate to their different learning styles. (Refer to recommendation #6.) Students need to be given choices in how they wish to pursue understanding and application of the material. Greater emphasis on supporting basic skills instruction has these further implications:

- Reduces and eliminates duplication of effort across courses, grade levels and disciplines; facilitates curriculum continuity

- Ensures that skills learned in the classroom will generalize to the problems and settings encountered on a day-to-day basis; improves student motivation

- Ensures that all essential learnings are acquired in the most favorable developmental sequence and that none are missed

- Schoolwide skills standards help generalize skills and bring students to criterion performance faster

- Increases time on task, thereby increasing learning rates and teaching efficiency

- Produces greater continuity in educational planning and more effective follow-through on a long-term basis; increases parent participation in instruction-related activities

- Improves teacher performance and motivation

- Improves the effectiveness and/or efficiency of instructional programming across time

- Provides most effective programs at the best cost/benefit ratio; resources are used to produce the greatest effects; wasteful activities are eliminated

3. The need of students to develop and hold values, ideals and standards should be taken into account more frequently. An important element of behavior characterized by valuing is that it is motivated not by the desire to comply or obey, but by the individual's commitment to the underlying value or principle guiding the behavior. There are levels of values as there are levels in the cognitive domain. At the lowest level of valuing, a student holds a certain belief; the student accepts the value. At the highest level of valuing, the student has conviction or commitment to the belief; the student has little doubt that the value is right. Activities which require students to incorporate values stress the internalization of a set of specified, ideal values. Examples of values textbooks should encourage are addressed in illustrative educational objectives like:

- Encouraging the development of effective speaking and writing
- Attaining optimum health
- Feeling a sense of kinship with human beings from all nations
- Being a participative group member by seeking to solve common problems at the local, national and international levels
- Recognizing the need for enriched spiritual life or for religion by different groups of individuals

4. Student attitudes need to be addressed more frequently. Positive student attitudes and student motivation to learn should increase as

the course of instruction becomes more meaningful to students. The textbooks could help learning be made meaningful by:

a. Relating the learning to the students' realm of experiences. Textbooks need to be explicit about how the course relates to their own experiences. For example, an activity on the War of 1812 may ask students if they have ever been involved in situations of conflict, and what the outcomes were.

b. Relating the learning to students' future goals. Here textbooks need to address situations students will encounter in the future, including skills they may need in everyday life or in the job market. One way to do this is to develop a statement that provides an overview of the activity to be accomplished and how doing so relates to future activities outside of school.

c. Relating the learning to students' interests. Students need to participate in choosing what they will learn from a variety of suitable and content-appropriate objectives. They should be allowed to make decisions about course objectives and procedures. Helping to direct their own learning while in school affords students the opportunity to develop their interests and can promote attitudes that favor continued learning attitudes while also providing them with a sense of involvement and ownership in course content.

Further, activities which encourage students to work with one another and gain pleasure from the experience are warranted. Similarly, students need support in learning how to set goals and standards of accomplishment. Criteria for this should be incorporated into the learning activities, as well as a means for self-evaluation, an important element of lifelong learning. Students need feedback--the texts need to provide this as a part of the content material.

5. Much of the learning that takes place during adulthood is used as a problem-solving strategy. Problem-solving skills need to be addressed and supported. Problem-solving involves application of principles and concepts. Concepts come together to form principles; principles are then used to solve problems. When a student is discovering and learning the properties of a concept inductively, that student is solving a problem. A student must solve a problem when a desired goal is out of reach. A problem means there is differential space between what a student can do and what that student would like to do. Texts can help students solve problems by specifically

incorporating and teaching complex principles. When students know what the important underlying principles are, they are better able and, therefore, more likely to be successful in solving problems. In cases where principles are not known (for example, problems of pollution and how the government strives to control this condition), students need to be aware of general principles that will aid them in solving the problem. Five steps are usually involved in the process of teaching students to solve problems:

a. Teaching students to recognize problems when they see them

b. Teaching students to state the problem in the form of a question

c Teaching students to collect information from many sources to find solutions

d. Teaching students to evaluate possible solutions and select from among them those that are likely to succeed

e. Teaching students to try out possible solutions and decide which is most feasible

Real historians are problem solvers; they sift through materials, derive conclusions and explanations based on evidence. Then they test those conclusions against the judgment of others. Texts need to present this picture of the historian at work in a problem-solving mode, and then involve students in similar activities.

Deliberate teaching of problem-solving skills can enable students to become effective lifelong learners.

6. Learning activities must be varied and allow for different learning styles. Research in hemisphericity points out that individuals can be sorted into categories of right brain learners and left brain learners, depending on how an individual generally processes information. The student who is "left brain" oriented processes data in a linear fashion, across time. For example, when a student relates a text to another text read in a different course, that student is using the left hemisphere of the brain. This student needs to read or listen to understand how things go together. The student who is "right brain" oriented processes data in an intuitive manner across space. For example, when a student recognizes a picture or a diagram displayed in a book, that student is using the right hemisphere of the brain. This student needs to 'see' how things go together. This student can't remember what was heard or read in a story but can describe in detail a movie that was recently seen. Such research is aimed at the importance of integrated brain thinking. Integrated brain thinking is the result of each hemisphere supporting

and augmenting the information processed by the other. For educators, this means providing instruction that is presented in a linear fashion across time (reading it or hearing it) as well as presenting information in visual space (seeing or imagining it) so that students have the opportunity to process information from both hemispheres. Another implication is that it becomes imperative to present information in a different way to a different hemisphere of the brain if the student is "not getting it."

Professional strategies for achieving integrated brain thinking are:

a. Presenting information simultaneously
For example,
"Tell us what this graph is displaying."
"Explain what you see in the pictures."
"Watch me as I draw the chart and listen to what I am thinking."

b. Assisting the learner who is not 'getting it' by changing the hemispheric input strategy--In other words, follow instructions directed at one hemisphere with instructions directed at the other hemisphere.
For example,
"I'll describe one example of wage and price controls and you describe another like it. Now find another example."
"Let's talk through the events leading up to the American Revolution."
"Now let's role-play one of the events."
"Make a picture that describes the Boston Tea Party. What does the picture show?"
"If we translated the time line into words, what would it say? Where would this event go on the time line?"

c. Instructing on one hemisphere only--This allows students the opportunities to practice and handle nonintegrated input.
For example,
"Read the directions, then do the activity."
"Figure out what is displayed in the graph."
"Look at the time line, then make one like it."
"Read the chapter and answer the review questions."

Again, the importance of integrated brain input is to allow students the opportunity to understand and relate information and experiences to their own backgrounds. Textbooks need to augment and support the traditional left brain teaching and learning in American classrooms with activities and input that requires right brain processing. Doing so helps students achieve success in learning and in independently selecting appropriate learning strategies once they leave compulsory schooling.

7. Learning activities must be varied and allow for different student interests. A wide variety of options needs to be given to students so they are able to help direct their own learning. Activities which incorporate the following interest levels need to be included frequently in the texts:

- Writing diaries, scenarios, stories
- Creating bulletin boards, advertisements and political cartoons
- Organizing debates and class discussions
- Viewing a variety of media
- Creating media events for historical happenings
- Using community people as resources
- Role-playing various personalities
- Researching historical landmarks
- Writing and composing songs
- Illustrating magazine articles and advertisements
- Creating maps

These activities also need to include self-checks or other systems of built-in rewards. Students need to know when their answers are correct and need positive reinforcement for completing projects so that they are motivated to learn throughout life.

8. The texts need to include more social history elements along with political history elements. For example, aspects of religion, the arts, social interaction patterns, employment patterns, recreational patterns and so on. Students are generally fascinated and "turned on" by these personal details of past eras. One needs only to look at the phenomenal success of Roots for proof that students are highly motivated by the social history approach. Understanding relationships between political history and social and intellectual history is critical to understanding the present as well as the past.

9. The various life roles the student will enter upon completing high school need to be addressed with greater frequency. Activities are needed which assist students in understanding and preparing for the duties and responsibilities for being a:

- Family member
- Citizen
- Friend and neighbor
- Worker
- Consumer
- Volunteer in community service

Additionally, in our efforts to achieve human fulfillment in a learning society, we need to help students become:

a. Aware of themselves as social, cultural, political and personal human beings
b. Aware of their choices, options, alternatives
c. Able to recognize and understand problems, then generate solutions
d. Capable of making appropriate choices then being able to carry them out
e. Knowledgeable of the principles of justice

An optimal lifelong learning environment is one that provides not only the goals but also the means to carry out those experiences so as to allow students the opportunity to develop their full potential vis-a-vis their adult life roles.

10. The size of the text should be manageable for students. The majority of students surveyed felt their books were too bulky and too heavy. Sheer size and weight was intimidating to many students--their first reactions were unfavorable. It appeared to be just too much to have to read. One option to this problem is publishing history books as a series of worktexts, developed chronologically or topically. These worktexts would have a workbook-type format which could include rationale for learning the material, pre- and posttests, vocabulary, background information, a wide variety of learning activities and a resource section. A series such as this would also allow for continuous progress learning; faster students could work through the materials at their own rates, while slower students would be provided with remediation and individual help when necessary. Students would have a greater sense of personal involvement in the discipline--they would be able to select those materials that were of interest and value to them at the time. There would be a choice in learning activities. Pretests would help students determine those skills, attitudes and knowledge they need to pursue. Posttests would help students determine the extent to which the material was mastered. Finally, extension and enrichment activities would allow for further choice, again depending on interest and abilities. It would appear that the publishing of student worktexts or similar designs would be more cost effective than the traditional text. Most history courses do not completely cover the material in the text during the quarter, semester or year. Many texts are used as supplemental materials; students and teachers use portions of the texts when specific information or activities are needed. Individual worktexts, however, mean students are working singly or in groups on aspects of history that interest them at the time. Slower students will probably move through fewer of the books; faster students will be able to cover as many as their personal learning rates allow. In addition, a series of individual worktexts means a continued sense of "newness" and "freshness" each time a student begins a topical area.

In summary, directing the learning experiences to the needs, interests, perceptions, aspirations and abilities of students is critical to the success of a lifelong learning-oriented curriculum and essential to helping students see the potential value of education beyond the years of compulsory schooling.

APPENDIX

SCHOOL TEXTBOOKS FOR LIFELONG EDUCATION

Frequency Tally

Use a stroke tally (1111 1) for each time an example of the following occurs, indicating whether you found the example in the text materials or in the exercises that accompanied the text. On a separate sheet, cite an example for each item (with the page number). Please use the item number on the examples to help us code the information.

Behavior

I. How often does the text explicitly address or encourage the user into

1.1 information seeking?

1.1a in the school context 1.1b beyond the school context
in exercises in text in exercises in text

1.2 development and/or use of problem-solving skills?
in exercises in text

1.3 initiate a learning activity?
in exercises in text

1.4 independent learning?
in exercises in text

1.5 look for relationships among disciplines?
in exercises in text

1.6 utilization of resources in the community for learning
in exercises in text

Life Skills

2. How often does this textbook relate its content to

2.1 preparation for careers in its field?
in exercises in text

2.2 preparation for higher education?
in exercises in text

2.3 preparation for vocational training?
in exercises in text

2.4 preparation for adult life roles?

2.4a family member		2.4b citizen	
in exercises	in text	in exercises	in text
2.4c friend/neighbor		2.d worker	
in exercises	in text	in exercises	in text
2.4e consumer		2.4f volunteer in community service	
in exercises	in text	in exercises	in text

2.5 preparation for constructive use of leisure time
in exercises in text

Attitude

3. How often does this text encourage the user to

3.1 cooperate with others?
in exercises in text

3.2 approach life with openness and curiosity?
in exercises in text

3.3 view learning as a source of personal satisfaction?
in exercises in text

3.4 recognize the need for and value of education throughout life?
in exercises in text

3.5 set goals or standards of accomplishment and engage in self-evaluation?
in exercises in text

3.6 examine values?
in exercises in text

3.7 consider alternative points of view?
in exercises in text

Basic Skills

4. How often does the text require the user to develop, improve or practice

4.1 reading?
in exercises in text

4.2 writing
in exercises in text

4.3 computing?
in exercises in text

4.4 speaking
in exercises in text

4.5 listening?
in exercises in text

4.6 analysis/critical thinking
in exercises in text

4.7 synthesis?
in exercises in text

4.8 evaluation
in exercises in text

Textbook Title:

Students' Textbook Review

1. Describe briefly your first impression of the textbook.

2. What did you like best about the book?

3. What did you like least about the book?

4. Is this a book you would want to keep after you finished the class?
Yes____ No____ Why?

5. If you kept the book, how would you use it?

6. If you kept the book, would anyone else use it?
Yes____ No____ Why?

7. Does this book make you interested in any other subjects?
Yes____ No____ What other subjects?

8. Did the book give you any ideas about activities to do in school?
Yes____ No____ What activities?

9. Did the book give you any ideas about activities to do outside school?
Yes____ No____ What activities?

10. Did the book make you want to get more information on the subject?
Yes____ No____

11. Do you think you will use the information this book gave you after you leave high school?
Yes____ No____ How will you use it?

12. Is there anything else about this book you would like to tell us?

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